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The Impact of Mergers Inefficiency:
A Case Study of Banking Status

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December 2007

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The purpose of this project is to examine whether the wave of bank mergers in Europe (1990s to the present) has led to improvements in bank profitability, bank efficiency, and benefits to consumers. We identify trends and average in financial data for various banks pre and post merger, and situate our results within the context of developments within the various countries. There are many reasons for bank mergers: economy of scales, resources, or acquisition of talented management. Increasing shareholders profit may provide the primary incentive for mergers, although greater market power is another motivation. The result of this project, however, is a comprehensive listing of improvements in the profitability of European banks from mergers, efficiencies, and, finally, benefits to consumers. The project's framework was trends per unit output.

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THE IMPACT OF MERGERS INEFFICIENCY:
A CASE STUDY OF BANKING STATUS

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Submitted in partial fulfillment of the requirements for the degree of

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I. INTRODUCTION

A. BACKGROUND

In today's competitive banking industry, many European banks have merged, thus changing the European banking industry landscape. Mergers may increase current earnings per share, but it does not necessarily mean that there will be an increase in long-term earnings. In fact, according to recent research findings, merging has resulted in many companies experiencing a slower rate of future growth.

Mergers occur for many reasons. Two key ones include: the desire to achieve economies of scale—spreading a fixed cost over a greater number of units of output—and the desire to secure resources not otherwise obtainable. Big banks may target smaller banks because of their lack of resources and difficulty in obtaining such resources. Mergers may also occur because of inefficiencies within management or processes. By merging with banks possessing talented management and exceptional processes, big banks can potentially save significant cash and acquire an additional competitive advantage.

B. PURPOSE

The purpose of this project is to examine whether the wave of bank mergers in Europe (1990s to the present) has led to improvements in bank profitability, bank efficiency, and benefits to consumers. This analysis identifies trends and the averages of pre and post-merger financial data, discusses the literature on banking mergers, and explores the developments in the banking sectors of various European countries.

C. RESEARCH OBJECTIVES

The objective of this research paper is to examine the efficiencies/non-efficiencies of bank mergers in Europe through a collection of databases and literature reviews. This research will also attempt to provide a comprehensive listing of improvements in European bank mergers profitability, efficiencies, and benefits to consumers.

D. RESEARCH QUESTION

In his article for the Journal of the National Bank Slovakia, *Bank Mergers and Acquisitions* (2000), Prof. Otto Sobek, CSc., in 2000 stated that,

> Banking is becoming an increasingly global industry, which knows no geographic and territorial boundaries. The trend towards mergers and acquisitions in banking is also affected by the unprecedented growth in competition, the continued liberalization of capital flows, the integration of national and regional financial systems, financial innovation, etc...

Professor Sobeck claims that global industry and new economic environments are reasons responsible for mergers.

He also argues that the number of European bank mergers during the second half of the 1990s increased due to the liberalization of the movement of capital and services between the individual member states of the European Union. The new European Monetary Union accelerated and pressured the banking industry to increase efficiency, which thus led to banking mergers.

Overall, if the merger of European banks proves to be more profitable and efficient within the banking industry, a couple of key questions emerge:

1. Do these profits and efficiencies benefit consumers?
2. How does this profitability and efficiency from European bank mergers compare to U.S. bank mergers?

Europe's new banking environment is a hot spot for economic activity and through ongoing research and the questions presented in this research project, it is possible to conduct a comparison between the profitability and efficiency of U.S. bank mergers and European bank mergers.

E. METHODOLOGY

The data, which forms the primary basis of the analyses in this research project, covers 97 European banks and was extracted from the Bankscope database. Bankscope is a complete financial analysis tool combining information of over 13,000 world banks

using a financial analysis software program. The information in Bankscope is updated approximately 18 times a year. Bankscope is a robust financial analysis tool that provides banking data for individual banks dating back to 1997. Even though Bankscope was limited in generating the format needed for this research paper, it was possible to extract the information needed and to build a database unique to this research project.

Thompson Financial's database, the secondary database, is used for the literature review and the assessment chapters. Those countries influencing the European bank mergers were identified in order to narrow the scope of the literature review, which targeted 14 countries dominating 76% of the mergers. This project determined whether there were countries controlling other countries' banking systems because of mergers. This aspect will be discussed briefly in the assessment chapter.

The period over which data was collected from Bankscope on mergers covered 1997 to 2007. The information needed required the extraction of information on the top 97 banks in Europe sorted by assets (merger year), and information from the year prior to the merger (pre) and after the merger (post). The merger year was different between the 97 banks, depending on the year the merger occurred. Using each merger's year, the pre and post years were found. Therefore, the format used is based on pre-merger and post-merger time periods.

The mean, the box plot statistics, and the standard deviation for the variables describe the data. The mean provides pre and post merger summary information on the data. The box plot, the inter-quartile range (IQR), and outliers are helpful in risk assessment. The standard deviation also provides a measure of risk within variables of this research project as described below.

1. Net Income
2. Total Assets
3. Total Loans
4. Deposits and Short Term Finance
5. Interest Expense per Deposits (Aggregate)
6. Loan Loss Provision per Loans (Aggregate)
7. Loans per Deposits (Aggregate)

8. Return on Assets (Aggregate)
9. Total Branches
10. Cost per Employees
11. Total Operating Costs

F. SCOPE

The Thompson database identifies the primary or dominant countries influencing the European bank mergers from 1970 to the present. The 14 dominant countries are Russia, Poland, Portugal, Belgium, Sweden, Italy, Germany, France, Austria, the Netherlands, Spain, Finland, Switzerland, and the United Kingdom (UK). The bulk of the analysis of financial data in the description and analysis chapters is based on data extracted from Bankscope.

G. ORGANIZATION OF THESIS

This research project is organized as follows.

Chapter I includes an overview of this research project, along with a review of the scope, purpose, and objective of this research. Chapter II contains a literature review of the topics necessary to understand the context of the European bank mergers. Chapter III is a description of data and the methodology and resources used in gathering and developing a unique dataset used for this research. Chapter IV is an analysis of the data, which utilizes the Coefficient of Correlation (CoC), regression statistics, and Little's Law (LL). Finally, Chapters V and VI summarize the research efforts, state conclusions, and assess findings on European mergers in the banking industry.

II. LITERATURE REVIEW

According to speakers at Standard & Poor's Global Bank Conference *Facing uncertainty from a position of strength*, held at the end of 2006, "The national consolidation of banks has produced stronger franchises and generated huge synergies for them while also creating leading players in several countries. Cross-border mergers and acquisitions, on the other hand, have opened up new growth opportunities for banks, and particularly, within Western Europe and Central and Eastern Europe (CEE) - as well as in the United States."

In his article for the Narodna Bank Slovenska, *Bank Mergers and Acquisition* (2000), Prof. Otto Sobek states, "Banking is becoming an increasingly global industry, which knows no geographic and territorial boundaries. The trend towards mergers and acquisitions in banking is also affected by the unprecedented growth in competition, the continued liberalization of capital flows, the integration of national and regional financial systems, financial innovation. Thus, Professor Sobeck claims that global industry and new economic environments are reasons responsible for mergers.

Fifty-five countries had banks available for sale (mergers) in the European market, according to Thompson's database, while 81 countries sought or completed bank acquisitions as depicted in Figures 1 and 2 in Appendix B.

In order to narrow the scope of this work, the dominant countries that influenced the European bank mergers for the period under investigation were identified. The result was 14 countries, which accounted for approximately 76% of the mergers as shown in Figures 3 and 4 (Appendix B). These countries are Russia, Poland, Portugal, Belgium, Sweden, Italy, Germany, France, Austria, the Netherlands, Spain, Finland, Switzerland, and the United Kingdom (UK). The countries that dominated the mergers were Italy, Germany and France. The breakdown of sellers and buyers are as follow:

Sellers: Russia 5.9%, Poland 6.7%, Portugal 3.9%, Belgium 3.4%, Italy 20.8%, Germany 14.8%, France 13.8%, Austria 4.4%, Spain 8.7%, Finland 3.5%, Switzerland 7.5%, and the United Kingdom (UK) 6.6%.

Buyers: Russia 5.4%, Belgium 4.0%, Sweden 3.6%, Italy 22.0%, Germany 16.6%, France 13.8%, Austria 5.2%, the Netherlands 3.9%, Spain 7.3%, Finland 4.0%, Switzerland 6.8%, and the United Kingdom (UK) 7.4%.

The following sections examine recent developments in the European banking sector on a per country basis. In general, the information discussed in the following sections suggests the following themes:

1. Russian mergers have resulted in capital gains, new expertise and a higher stock market valuation, although there are concerns that the Russian infrastructure may limit the success of acquisitions of domestic banks by foreign banks.
2. Portugal's slow economy and high deficit were factors motivating Portuguese banks to engage in cross-border mergers;
3. Belgium's banking industry, which concentrates on retail-banking, could have difficulties in combining different banking cultures in retail banking mergers
4. Sweden's goal in banking mergers has been to become the leader in the Nordic Baltic banking industry;
5. Italy has promoted cross-border mergers through new laws and regulations
6. France's banking institutions have undergone privatization, and some of its merger activity has been linked to this shift.
7. Spain's banking industry has been growing through mergers and changing traditional images of the Spanish banking sector.
8. Finland's banking sector provides strong Nordic competition for Sweden;
9. Switzerland's stable political environment and high savings rate has made it an attractive landscape for banking mergers

A. RUSSIA

Russian bank mergers have resulted in capital gains, new expertise and higher stock valuations. Nevertheless, there have been concerns about whether the Russian infrastructure is strong enough to enable success of domestic banks by foreign acquirers. In May of this year, an anonymous article from Country Monitor, *Playing politics with banking* (2007) took the following position "…Political loyalty is increasingly not just a business asset but, for Russian and Western companies alike, a prerequisite for doing business in the booming Russian economy. The most obvious route for a foreign

institution is to buy into the local market, but this is fraught with difficulties…" If the host country does not provide the tools for foreign capital investment in the form of bank mergers, then any possible economic booming would most likely stagnate.

In recent years, for instance, Russia has moved toward more relaxed policies to gain a competitive edge in the banking market. Russian neighbors have arranged mergers to increase their investment horizon in a promising market. John Evans, in his journal article *Competition – Russia* (2007) for Lafferty Ltd. states, "Interest in Russia's banking market, already red hot after a dramatic 2006, could become even more competitive this year as new regulations aimed at opening up Russia to foreign banking groups. A number of European banks are already showing an interest."

Increases in stock value also influenced European interest in the Russian market. A domino effect resulted, which was a consequence of flexible Russian legislation concerning foreign investment. Russia provided foreign investors the same rights as local investors. Despite new Russian legislation geared towards foreign investment, the article also claims that the Russian government will not allow players to dominate Russian banking. The article states, "The economy is in its eighth straight year of growth…Russian banks are showing increased willingness to cooperate with foreigners to attract new capital and expertise." Thus, the potential capital and expertise gained through mergers seems to be the answer for the Russian legislation toward bank mergers with other countries.

B. POLAND

Poland's foreign policy with regard to banking mergers seems to be much more relaxed than its Russian counterpart. Indeed, an Italian buyer bank named UnitCredito acquired significant control over Poland's bank named BPH through a secondary deal with Germany.

Since Germany held significant BHP branches, it was almost impossible for Poland to stop Unicredito's acquisition of BHP since the precedent was already set that foreign banks could have some form of ownership in Polish banks. However, after the

completion of the transaction, Poland's banking system went into negotiations with Unicredito to repossess BHP control.

Mark Landler in his article to the New York Times, *Poland Averts Clash With Europe Over Italian Bank Deal* (2007) states, "the Polish government on Wednesday reached an agreement with the giant Italian bank UniCredito that allows two Polish banks to be combined under their Italian owner. Under the terms of the deal, UniCredito agreed to sell 200 of the 480 branches of Bank BPH, the big Polish financial institution it acquired last year through its purchase of the HVB Group of Germany..."

The article also claims that despite the merger deal over BHP, the government and Leszek Balcerowicz (commissioner of the Polish central bank) were in disagreement about the merger agreement. Thus, "…an investigation has been generated against the commissioner," suggesting that the BHP arrangements with Unicredito potentially compromised Poland's interest or a conflict of interest surrounded the transaction.

C. PORTUGAL

Portugal's slow economy and high deficit caused them to seek cross-border mergers to spark their economic growth. According to Lafferty Ltd., *Case Study – Millennium BCP: Turn of the Millennium* (2007), Portugal Millenium BCP (Banco Comercial Português) , the country's largest bank, plans to expand its horizon. The targeted country is the Romanian banking market. "Millennium will set up in Romania from scratch; it has announced plans to invest E40 million in the country, setting up a 40-branch network with the first branches scheduled to open in the second half of this year. The bank estimates that it will invest a further E200 to E250 million in Romania in the next four years, with a 100-branch network being the bank's target by 2011."

Mr. Paulo Teixeira Pinto, chief executive of Millennium BCP states, "Portugal hit the bottom of the curve last year and is now back on the path to sustained growth." This may be the reason why BCP has apparent interest abroad through investment in Romania's banking market.

In addition, the "Portuguese budget deficit as a percentage of Growth Domestic Product (GDP) stood above 6.8%." Portugal's GDP is actually above the regulated European deficit allowed by its members, according to the article. Rui Martins dos Santos, an economist and director of Banco Portuguese de Investment, agrees that the only definitive solution for the deficit is economic growth. Portugal's budget deficit is more a consequence than a cause of weak economic growth…" Although, the exact reasons why BCP is seeking new ventures abroad may remain unknown, the real question is how investment abroad would help Portugal's already suffering economy. BCP's interest to invest abroad may be an act of desperation to increase working capital, which is limited in the country due to its slow economy growth.

D. BELGIUM

Unlike Russia, Poland and Portugal, Belgium's banking industry concentrates in the retail-banking secto; however a retail banking strategy may be difficult when integrating different banking cultures. According to Lafferty Ltd., in its article *Dexia seeks new partner following Sanpaolo talks* (2004), "…Dexia was created in 1996 from the alliance of two top-level operators in local public sector financing in Europe: Crédit Communal de Belgique and Crédit Local de France." Dexia dedicates its services to the retail-banking sector. "Dexia is a retail bank which has 5.5 million customers in Belgium, Luxembourg, Slovakia, and Turkey. Over the years, Dexia has developed a broad range of banking services for private individuals, small and medium sized businesses, and institutional clients." However, the sector leaders believe that any possible banking mergers outside the country's perimeter would most likely be inefficient because retailing is about the customer's business tactics rather than strategic management decisions and therefore should be considered.

Why does Belgium's banking industry place so much interest in the retailing sector? The article claims that bank retailing services is all about culture. This strategic fact means the banking industry's interest in the retailing sector for only host mergers or success may be unlikely. "According to one senior executive at a European bank, any cross-border merger involving retail banks will be difficult to achieve. It is possible to

offer your own retail banking services across a border where the cultures are similar. But it is much more difficult to put two different banking organizations together, especially where one is from north Europe and the other from the south…" A country's culture is undoubtedly present, but not to be underestimated, and it should not necessarily be an absolute obstacle to domestic or foreign mergers.

E. SWEDEN

Sweden's strategy is to become the leader in the Nordic Baltic banking industry by providing incentives, merging with the most promising banking systems in the area, and paying higher premiums per share. In 2005, Sweden's Estonia Bank (SEB) began its journey to gain greater banking control in Europe by acquiring Poland's Bank Ochrony Srodowiska (BOS). SEB actually paid more than their fair market price per share for the acquisition of BOS, according to Lafferty Ltd. in its article, *SEB pushes deeper into Poland with BOS acquisition* (2005). The article states, "Sweden-headquartered financial group SEB…to capitalize on growth in new EU members' banking markets with its offer to buy a 53 percent stake in Poland's Bank Ochrony Srodowiska (BOS) for PLN510 million (0.9 million)." One of the probable reasons for SEB's attractive price per share offered, according to the article, is Poland's GDP promising growth.

As in any business transaction, mergers should benefit both parties, including the acquired bank and perhaps its countries if the bank mergers include banks from different countries. Thus, BOS seems to have a promising position by merging with SEB. How would they benefit from the transaction and at the same time increase each bank's reputation as worldwide banking? Tim Beck of Fitch's Financial Institutions Group said to Lafferty Ltd. "…benefit from SEB's expertise in risk management and product development." Thus, to make the transaction work, SEB provided enough incentive to Poland's government and its banking industry. They promised that services would indeed improve significantly. SEB promised to improve Poland's distribution channels and products offered as well as performance and efficiency through human resources, risk management, and internal audits.

However, how would they achieve all these objectives? Referring to SEB's strategy, "The bank's strategy is to focus on European countries that experience strong trade flows, including Germany, which enjoys particularly strong trade links and has $33.7 billion (E28 billion) of trade with Poland, Sweden, Denmark, Norway and Finland. In Eastern Europe, it has identified Russia, Estonia, Lithuania, Poland, and the Ukraine as key markets." The answer seems clear: SEB's goal is to be one of the most influential banks in Europe by merging with the most promising banking system in the area.

The Swedish banking industry acquired some of Poland's most promising banks, and by doing so, they expanded their acquisition to the Republic of Estonia. According to Lafferty Ltd. in its article, *Swedbank steams ahead in Nordic battle for the Baltics* (2005), "ForeningsSparbanken (Swedbank) wants to bid for the 40.3 percent of Estonia's Hansabank that it does not already own, in a move which will consolidate its leadership position in the Baltics and give it a platform for growth in Russia." The Republic of Estonia is a Northern European country and Swedbank's mergers intentions were clear: expansion into the Russian growing market.

Seeking to become the leading banks in the Nordic Baltic, Swedbank paid a price premium per share. According to the article, it is estimated that Hansabank controls around one-third of the Baltic banking market. "Low level of banking penetration in the Baltics - loans as a percentage of GDP run at 28 percent compared to the EU average of 102 percent - Merrill Lynch analysts predict that lending in the Baltics could grow at a compound annual rate of 24 percent over the next five years." Thus, the Baltic's banking industry seems to be a very promising market and Swedbank would obtain other collateral benefits from merging with Hansabank in Estonia. This will provide them entry into the much-desired Russian market.

The major attraction to Sweden is a developing Russia and its strong links. A key factor is the flow of cargo through the European region. "According to official trade statistics around 70 percent of cargo that flows through the Baltic ports is of Russian origin." By merging with Swedbank, "Hansabank aims to attract Russian's customers doing business in Baltic markets." Obtaining economic and finance strategic positions as its best!

F. ITALY

Like Portugal, Italy's slow economy has resulted in new laws and regulations for cross-border mergers, which, in turn, has proven the importance of mergers in Italy, and has increased the growth in Italy's banking industry. In his article, *Determinants of bank branch expansion in Italy* (1999), Hester argues that bank branches and the number of communities served by these branches have increased since the late 1980's. These increases have been a consequence of market pressures, "Italy's plan to join the European Monetary Union and bank regulation reforms in 1990 and subsequently. It is somewhat surprising, in a period when banks are increasingly adopting modern data processing technology, that such large brick and mortar investments should be occurring."

Herter, looking at the amount of banks in Italy as of 1999 states,

> There were 934 banks in Italy at the end of 1998, as compared to 1,154 in 1990. Between these years, the decrease occurred in all categories of Italian banks: joint stock banks fell from 289 to 237, cooperative banks (*banche popolari*) from 107 to 56, and mutual banks (formerly rural and artisan banks), from 716 to 563. By way of contrast, the number of foreign banks in Italy increased from 37 to 59. Requirements on the specialization of banks were weakened in the 1980s and legally eliminated in 1993 by the new Banking Code (*Testo Unico Bancario*), which abolished the old categories of banks of national interest (*banche diinteresse nazionale*), credit institutes of public law (*istituti di credito di diritto publico*), and savings banks (*casse di risparmio*). The number of banks decreased in the 1990s because of mergers, not overt bank failures. (*Determinants of bank branch expansion in Italy*).

Italy's banking mergers increased throughout the 1990s.

> Until 1989, the annual number of mergers was around 12; they have averaged about 43 per year between 1990 and 1997. Most mergers involved relatively small mutually chartered banks. Southern banks that were often in financial distress have been acquired by banks with head offices in the North and Center regions. A typical merger had a large bank absorbing a smaller bank. Until recently, mergers between banks of similar size were relatively rare (*Determinants of bank branch expansion in Italy*).

Many circumstances potentially explain the increase in mergers in Italy,

> the European Common Market initiative of 1993 and the 1999 commencement of the European Monetary Union; the small size of Italian banks relative to leading continental competitors; possible economies of scale and/or scope; tax incentives introduced by the Amato Law and confirmed by other laws; and bail-outs of banks in financial distress. These changes and conditions also partially explain the growth in interbank stock holdings and the growing scale of banking groups, structures that mitigate the economic, managerial and organizational stresses that otherwise accompany mergers (*Determinants of bank branch expansion in Italy*).

In its article *Getting more popolari* (2006), Economist.com states, "Banca Intesa, Italy's second-biggest bank by assets, announced that it planned to merge with Turin-based Sanpaolo IMI, its next-largest rival. The aim is to create one of Europe's ten biggest banks, which, if run correctly, could give Italy the sort of financial heft it needs to stoke a sluggish economy." Thus, the mergers in Italy have resulted from regulations and laws that have opened up a ray of opportunity and showed the importance of mergers for many banks in Italy.

G. GERMANY

Germany's banking system is comprised of commercial, savings, and cooperative banks, a market in which higher competition among banks produced a wave of bank mergers. In his research work titled, *Germany: A country study* (1996), Solsten argues that Germany's financial system is bank-based,

> …with the main role in finance and credit being played by commercial and savings banks while other forms of credit are secondary. Banks provide most of the country's investment capital because of the high German savings rate and because most Germans prefer to put those savings into banks rather than into stocks or bonds. As with many other German economic phenomena, this bank role is not new. Banks have played a central role in German financial and economic history since the Middle Ages.

From an anonymous document titled *Bank mergers and efficiency: Evidence from the savings industry* (2006), the author presents the main sections of Germany's banking

system. The banking systems in Germany "comprises three main pillars, namely, that of the commercial banks, the savings banks, and the cooperative banks," see Table 1. The article emphasizes that the German banking system is over-populated with its 2,235 banks and 35,340 bank branches as of the end of 2003 and that it has one of the lowest concentration ratios worldwide with the five biggest banks. This accounts for about 20 percent of total bank assets and the average profitability of the sector ranks among the lowest in the world, according to the article.

How is it possible the German profitability is among the lowest in the world? The reason is apparently due to "severe competition among the numerous banks in the country… This is also considered as one of the driving incentives for consolidation in the banking industry. In fact, bank mergers have been on the rise, resulting in a 30 percent decrease of total institutions over the last ten years" (*Bank mergers and efficiency: Evidence from the savings industry*).

In an article by Patrick Richter titled *The Deutsche Bank/Dresdner Bank merger: a struggle for worldwide market domination* (2000), he states that bank mergers have been on the rise following the merger of Germany's two largest banks, Deutsche Bank AG and Dresdner Bank AG. The mergers are Germany's response to tough competition as he states, "…to form the biggest financial institution in the world… is the German response to increasingly tough competition for domination of the world financial markets. It signals the beginning of profound changes in Germany's economy."

H. FRANCE

France's banking institutions have undergone privatization. In France "the banking system, which was nationalized by a socialist government in the early 1980s, is now mostly in private hands, but the state still owns a number of institutions such as the Caisse des dépôts et consignations (CDC). In addition, the state plays an important role in the savings market by setting interest rates for tax-exempt (Livret A) accounts; and mutual banks, savings banks and the CDC are sometimes susceptible to pressure by central or local government when taking lending decisions" (*France: Market profile* 2005).

On the other hand according to the Commercial banking industry profile of France in 2005 stated:

> …moderate revenue growth in the French commercial bank industry in recent years makes it attractive to new entrants. However, following a surge of M&A activity in the 1990s, the competitive landscape is now quite concentrated, with major players such as BNP Paribas and Crédit Agricole holding substantial industry share. For a new bank to enter the industry, it would normally require large capital outlay in order to establish a brand and a branch network, while competing on service offering and price (i.e., interest rates and fees) with these major players. (*Commercial banking industry profile: France* 2007).

Central control of France's banking system still primarily influences French banking mergers.

> The Banque de France (the central bank) and the Ministry of Economy, Finance and Industry share ultimate responsibility for the supervision of the banking system, but day-to-day responsibility rests with the Commission Bancaire. The Commission Bancaire is nominally an independent institution, but it is chaired by the governor of the Banque de France and the central bank provides most of its staff. Responsibility for authorising banks (or revoking such authorisations) rests with a separate body, the Comité des établissements de crédit et des enterprises d'investissement (CECEI). (France: Market profile 2005).

French banking systems continue its recovering wave. According to France: Market profile (2005) in the EIU: Economist Intelligence Unit it stated:

> …financial results released in early 2005 suggest that French banks continued to recover, after two difficult years in 2001-02 that were marked by the downturn in global equity markets and a fall in mergers and acquisitions activity. France's largest bank, BNP Paribas, posted profits of €4.67bn in 2004, a rise of 24.1% on 2003, while Société Générale registered a record profit of €3.1bn, an increase of 25.4% on 2003." In addition, Commercial Banking Industry Profile: France. (2007), in its article Commercial Banking Industry Profile: France, states that as of 2006, the commercial banking industry in France "…grew by 4.2% to reach a value of $110.1 billion."

I. AUSTRIA

Austria's banking system is a centralized financial system which is "under the broad direction of the Nationalbank, the Austrian central bank, in coordination with the Austrian government. According to Solsten, in his research work titled, *Austria: A country study* (1994), he states that banks in Austria play a main role in their financial system, particularly in corporate finance.

> They carry out not only regular deposit and lending activities but also such other functions as portfolio management and investment advice. Because most savings are deposited in banks, banks are the principal source of funds for business. Austrian banks tend to maintain close relations with industry, especially with the firms to which they have extended credit. Banks are often represented on supervisory boards or, at the very least, play prominent roles in advising firms with respect to business and investment decision (Solsten et al., 1994).

According to The Economist Intelligence Unit, in its report *Financial Services Forecast World* (2005), it describes Austria's larger banking mergers. The banking system of larger banks in Austria

> …traditionally formed close ties with either of the two mainstream political parties-the SPO and OVP, although this politicization of banking has diminished. In the early 1990s Landerbank (SPO-dominated) and Zentralsparkasse (SPO-dominated) merged to become Bank Austria. In the second half of the 1990s Die Erste (OVP-dominated) and Girozentrale (partly OVP-, partly SPO-dominated) merged to become Die Erste Bank (OVP-dominated), now Austria's second largest bank. The hostile takeover of Creditanstalt-Bankverein (CA-BV, dominated by the OVP) by Bank Austria in 1998 resulted in the creation of Austria's largest financial and industrial conglomerate.

The article further describes Austria's mergers as politically influenced.

> In January 2001 Bank Austria merged with the Bavarian HypoVereinsbank (HVB), creating Europe's third largest banking group (dominated by the German partner). This marked the end of political influence over a large part of Austria's financial sector and in August 2002 enabled the complete merger of Bank Austria and CA-BV to form Bank Austria Creditanstalt (BA-CA). As part of the HVB group, BA-CA had to give up all of its business in western Europe, North America and Asia, but it is now the largest bank in central and eastern Europe. Total assets of

> BA-CA amounted to around €155bn in June 2005, with a market share in Austria's retail banking sector of 20%. It is more than twice the size of Austria's second largest bank, Erste Bank.

Many mergers have taken place with Austria's key banks, for example, Erste Bank acquired a bank in Romania. In an article in Market Watch: Financial Times, A*n expensive but valuable foothold in CEE* (2006), it states "the largest remaining state-owned bank in central and eastern Europe has become part of the Erste Bank empire after the Austrian firm paid E3.7 billion for a controlling stake in Romania's BCR Bank. Indeed, with the majority of the large central European banking markets already dominated by western players, future expansionists may have to look further east to achieve their goals."

The Market Watch: Financial Times article further states:

> …this announcement completes a year in which western European banks, constrained by slow growth in their domestic markets, turned their attention towards eastern Europe – a region growing at twice the rate of many western countries. With the majority of the large central European banking markets already dominated by foreign competitors, western banks are increasingly looking towards less developed states further east and seem to be willing to take on greater risk in return for higher growth and profit margins."

J. THE NETHERLANDS

The Dutch banking industry, which is largely controlled by four banks, is becoming competitive at both local and foreign markets. According to the "Netherlands: Market profile," in *Financial Services Forecast World* (2005),

> ...banking and financial services sector has seen a wave of consolidation since the beginning of the 1990s. There has been significant merger activity both between individual banks and between banks, insurance companies and securities firms to create financial conglomerates. There are still around 100 banks in the Netherlands (including branches of foreign banks), but consolidation has resulted in a steady downward trend in the number of individual branches from around 6,500 in 1999 to around 4,600 in 2002.

The article continues:

> The three largest domestic banks, ABN Amro, ING Bank and Rabobank, account for around 60% of banking business. The banking sector employed 154,000 people in 2002, and the financial services industry as a whole (including banking insurance and pension funds) contributed 6% to overall GDP in 2002. Dutch banks between them handle 22.6m current accounts and 20.8m savings accounts and the balance-sheet total for the banking sector amounts to around €1.8bn. The EU has been working to promote financial integration, and much recent merger activity in the sector has been crossborder.

In Datamonitor's report, *Banks Industry Profile: the Netherlands* (2004), it describes the Netherland banking industry and mergers.

> The leading banking companies in the Netherland consist of four banks. The first bank is ABN AMRO Holding, N.V, it specializes in investment banking services, leasing, and growing operations in pan-European real estate development, financing, and management. It ranks 11th in Europe and is 23rd in the world based on tier one capital. The second bank is ING Groep N.V.; it is the world's largest insurer. In fiscal 2002, revenues generated rose 3% to $81.9 billion (€76.8 billion). The third bank is Rabobank Nederland which is a banking services group focusing on the food and agriculture industries. The group is the fourth largest banking operation in the Netherlands. For the fiscal year 2002, it reported revenues of E8.6 billion. The last bank is KAS Bank NV, which is a financial, services company specializing in the securities industry. In fiscal 2001, it generated revenues of E256.5 million.

As the banking industry in the Netherlands becomes increasing competitive through both local and foreign banks, there have been substantial mergers. In MarketWatch: Global Round-up report *Company Spotlight: ABN Amro.* (2006), it states

> …in particular, a number of large commercial banks, insurance companies and other broad-based financial services firms have established or acquired broker-dealers or have merged with other financial institutions in Japan and overseas. While the traditional reasons for mergers - achieving scale and building market share are still valid, today's mergers are likely to be driven by reasons that go beyond sheer increases in size. In many cases, banks are now pursuing deals that will fill in gaps in product lineups and broaden geographic coverage in current markets as well as enter new markets.

K. SPAIN

Spain just recently made its presence known in the banking industry, and earlier perceptions of the Spain banking sector as a sleepy organization that worked half days while catering to German and British tourists have long disappeared. Skeptics that wondered if Spain was ever a contender in the banking industry are now surprised by their huge success. The article in Euroweek, *Why can't others have the courage of Spanish?* published in 2007 reported: "the Spanish banks made a fortune in their own domestic sector and were at the forefront in expanding through the booming markets in Latin and South America." Due to their hard work and business savvy "the Spanish proved to be not only visionary, but also excellent managers, who were often better than their counterparts in the UK or other countries in continental Europe." The Spanish were effective in managing their branch networks without compromising customer integrity. Spain became adept at cross-selling. Their businesses in construction and mortgage lending were very profitable. Spain's main banking groups BBVA and Santander are expanding.

Santander acquired Abbey, the former Abbey National. This merger constituted Spain's new purpose. Abbey was threatening to self-destruct before Luqman Arnold came to the rescue, but the Santander Group had to overcome quite fierce opposition in the UK. Although Abbey had significant exposure to the UK domestic housing market, the acquisition appears to have been smoothly integrated. The Santander Group is now among the eight largest banking organizations in the world, as measured by market value.

According to Lafferty Ltd., *Profile-Grupo Santander: Carrying a torch for Europe* (2006) the merger of Santander and Abbey brought Santander from being the 152nd-largest bank in the world to the eight-largest, making profits of €6.22 billion in 2005. Twenty years ago, they had profits of €200 million. "It is also the fourth-largest bank in Europe in terms of market capitalization, after HSBC, UBS and Royal Bank of Scotland, and is the largest bank in Spain and Latin America. The acquisition of UK banks in November 2004 increased Santander's size by one-third."

Santander Group has 129,000 employees and more than 66 million customers who are serviced through a network of 10,000 branches. It also claims to have a potential customer base of 800 million people in Europe and Latin America. At the end of 2005, Santander Group, including Abbey, recorded net attributable profits of €6.22 billion, an increase of 72.4% at the end of December 2004. Over a relatively short period of time, the group acquired 50 organizations. The acquisitions in Spain of Banco Hispano and Banesto in the mid-1990s put Santander Group on track to become a global bank, by becoming the number one bank in Spain. It was then ready to expand internationally into continental Europe, Latin America and, more recently, the UK.

L. FINLAND

Karen Beavis, author of a *Case Study – OP Bank Group: The start of something big writes* (2007) stated that:

> Finland's dominant financial services group, OP Bank Group, is forming a powerful Nordic business. While the group says the main threats to its franchise will come from other pan-Nordic businesses, it believes that its strong customer service will help it to maintain a loyal customer base." "Co-operative banks across Europe have become a force to be reckoned with, holding around 25 percent of the continent's banking market, according to the European Association of Co-operative Banks. Just like their commercial counterparts, Finland has been going through a period of consolidation. The OKO Bank took the markets by surprise, when in late 2005, it announced plans to buy the country's second-largest non-life insurer Pohjola in the biggest deal of its kind in Finland. "OKO Bank bought a 58.5 percent share of Pohjola for E1.2 billion in the third quarter of 2005.

Thirty percent of Pohjola clients are now banking clients and 95 percent of Pohjola's new customers are from the bank. At the end of 2006, the number of joint customers in banking and insurance operations grew by 98,000 to 803,000 out of OKO's customer base of 4 million. The number of households holding Pohjola products rose by 34,000 to 367,000. In addition to OKO's diversification of products and the enlargement of the customer base and branch network, the acquisition produced significant revenue synergies of €17 million annually and €35 million in cost synergies. OP Bank Group

expects the acquisition to generate significant revenue synergies of €45 million a year before taxes, with the full effect occurring in five years.

At the end of 2006, OP Bank Group had a 31 percent share of the total loans market, a 33 percent market share of domestic deposits, a 22 percent in mutual funds and a 19 percent of life and pensions savings. The acquisition of Pohjola adds a new 26 percent market share in non-life.

In addition to becoming number one in all its business segments including retail banking, investment services and non-life insurance, OP Bank Group now intends to focus on banking services for large corporations and become a top player in the market for small and medium sized companies.

OKO Bank is owned by Finland's central co-operative OP Bank Group, which was set up in 1997 by the Co-operative Bank Act following an economic depression in Finland in the mid-1990s. Boasting assets of €59.5 billion at the end of December 2006, the central co-operative bank has 232 member co-operative banks. OP Bank Group is owned by the members, establishes the group’s vision, and coordinates their strategy. While OKO Bank is the lead bank of the members and is part-listed on the Helsinki stock exchange, it also acts as the group's central and corporate bank with responsibility for market funding.

As well as giving OKO Bank a strong marketing advantage, its co-operative status and Finnish identity means that its core objectives are centered upon giving customers value. Profits are distributed to customers through a bonus scheme, which works along the lines of a points-based rewards scheme. At the end of the year, clients can redeem their points by having cash paid into their bank account or a sum that pays off their mortgage or by receiving a discount on insurance premiums.

The acquisition puts OP Bank Group on a par with Nordea in Finland. Nordea, a pan-Nordic bank with 10 million customers and a capitalization of €31.4 billion, was formerly the group's main competitor. The third bank in Finland in terms of market share is Sampo, which was acquired by Denmark's largest banking group, Danske, at the end of 2006. Danske, Denmark's second-largest bank paid a premium for getting access to

Sampo's high-growth markets. The acquisition values Sampo Bank at 3.5 times book value, compared with an industry average of about two times for similar takeovers. From Danske's perspective, the acquisition will enlarge its customer base by 44 percent to 4.9 million and expand its branch network by 20 percent to 895 outlets. With 1.4 million retail customers and 100,000 corporate customers, Sampo Bank holds 15 percent of the retail market and 20 percent of the corporate market in Finland.

M. SWITZERLAND

Robert Furter, author of the article *Why Switzerland will not give up bank Secrecy* (2002) for the International Financial Law Review, stated: "Switzerland is one of the world's leading financial centers." He contributed this success to a "stable political environment, the country's capacity for saving, a stable currency with minimum transfer restrictions, traditionally low interest rates, and highly sophisticated and secure financial institutions." He also noted that in the past few years Switzerland have seen rapid consolidation in the financial services industry. However, the consolidation process culminated in December 1997 with the merger of Swiss Bank Corporation and Union Bank of Switzerland to form UBS.

Switzerland has a universal banking system consisting of financial services, including securities transactions. Foreign-controlled banks and branches of foreign banks enjoy the same treatment as domestic institutions. The two leading Swiss banks (UBS and Credit Suisse Group) maintain a nationwide network of branches and are, through subsidiaries and branches, present in all major financial market places.

The power to regulate and supervise the financial market is vested in the National Bank and the Federal Banking Commission. The traditional role of the National Bank is that of a central bank; the main objective to be pursued by the Federal Banking Commission under the Federal Banking Statute (Banking Statute) is creditor protection. In past years, the National Bank and the Federal Banking Commission have together tried to expand their traditional functions into an overall supervision of the financial market. They take the position that pure policing functions are insufficient to ensure the integrity and smooth functioning of the Swiss financial market.

Besides the National Bank and the Federal Banking Commission, self-regulatory organizations exist. Self-regulation has a longstanding tradition in Switzerland's banking and finance industry. The leading self-regulatory organization is the Swiss Bankers Association. Its members are banks and similar institutions, such as securities firms, other finance and holding companies, and auditing firms. The membership list encompasses virtually all institutions in the banking and financial sector.

Switzerland has no specific laws or ordinances dealing with the acquisition of financial institutions. However, according to Robert Furter, for the International Financial Law Review, when acquiring a bank, two main aspects are considered.

1. Due Diligence vs. Bank Secrecy

Due to bank secrecy, a possible target bank is restricted by law from disclosing its customer data to an interested buyer. In practice, this problem is overcome by having the target bank itself retain the services of an accounting firm or a law firm to execute a due diligence examination on the bank's behalf. The due diligence report in anonymous form is then handed over to the buyer. Another possibility is to have a representative of the buyer elected as a board member of the target bank who is entitled to access the relevant customer data. However, any information obtained by such a representative is protected by bank secrecy and cannot be disclosed to the buyer. The two possibilities are often combined.

2. Qualified Participations

Under the Banking Statute, Robert Furter states "…any acquisition as a consequence of which an individual or a legal entity, directly or indirectly, participates in at least 10% of the capital or voting rights of a bank or may otherwise exercise a similar influence on the bank's business activities has to be disclosed to and approved by the Federal Banking Commission." The buyer of such a qualified participation must be able to prove to the Federal Banking Commission that its influence on the bank will not have a negative impact on a prudent and solid business activity of the bank. Furthermore, a buyer of a qualified participation must provide the Federal Banking Commission with a

declaration as to whether it has acquired the participation for its own account or on a fiduciary basis for third parties and whether it has granted options or similar rights for this participation.

N. UNITED KINGDOM

In recent years, consolidation and restructuring, not just within the UK financial services sector, but also internationally, have occurred at a rapid pace. The widely held view is that this process will continue to be spurred by internal and external pressures. These pressures include increasingly activist shareholders, globalization, the impact of the European Union and competition from traditional financial services providers, and Internet-based operations. The UK, a leading trading power and financial center, is one of the four trillion dollar economies of Western Europe and has expended beyond the banking industry by acquiring other market sectors, according to the Journal of Commerce, *Just the facts* (2006).

Barclays Bank is one of the UK's largest banks and has six divisions, over 3,600 branches in more than 50 countries and employs 123,000 people. Over half the banks profit was generated overseas in 2006.

III. DESCRIPTION OF THE DATA

A. INTRODUCTION

The primary source used to collect the financial data in this analysis was the Bankscope database. This database is a complete financial analysis tool that combines information from over 13,000 world banks with a financial analysis software program. Even though Bankscope was not capable of generating the format needed for this research paper, the data for 97 European banks was accessible.

The bank merger information obtained from Bankscope ranges from 1997 to 2007, including the consolidated and unconsolidated statements. The information needed was extracted from the Balance Sheet and Income Statements of the top 97 banks in Europe (sorted by assets) for the merger's year (called "merger" throughout the report), and information from the year prior the merger (called "pre" throughout the report) and after the merger (called "post" throughout the report). The merger's year can be different for the 97 banks, depending on the year the merger occurred. Using each merger's year, the pre and post years were found, and thus, the format used is based on separating the data into the pre-merger and post-merger periods.

The mean, the box plot statistics, and the standard deviation for each variable summarize the data. The mean provides a measure of central tendency for the data that when compared over different time periods (pre-merger, merger and post-merger) yields valuable information on the behavior or characteristics of the mergers. From the box plot, the inter-quartile range (IQR) and outliers were used. IQRs measure the spread of the middle 50% of the observations, a measure of variability compared to the mean standard deviation. If the IQRs are higher (pre-merger, merger and post-merger), the level of variability is assumed to be higher, and vice versa. Outliers, on the other hand, represent the over or under performers, while the standard deviation was used to measure the spread of each variable around the mean as described below.

1. Net Income
2. Total Assets
3. Total Loans
4. Deposits and Short Term Finance
5. Interest Expense per Deposits (Aggregate)
6. Loan Loss Provision per Loans (Aggregate)
7. Loans per Deposits (Aggregate)
8. Return on Assets (Aggregate)
9. Total Branches
10. Cost per Employees
11. Total Operating Costs

B. NET INCOME

In the United Kingdom, net income is known as "profit attributable to shareholders." The Net Income (NI) is calculated by taking revenues and adjusting for the cost of doing business, depreciation, interest, taxes, and other expenses. The importance of NI is the measurement of a company's success, and this success can be expressed on a per-share basis or perhaps better known as earnings per share, or EPS. NI is an artificial number that does not reveal the actual amount of cash. A positive "bottom line" is a good indicator that the company is doing well.

According to the data collected for this research, the European bank mergers' NI increased significantly for the periods under investigation. The merger year, although different for each bank, showed a mean "bottom line" of $317M. The mean for pre-merger and post-merger years were $195M and $849M, respectively. The merger of the 97 banks showed a significant NI increase of approximately 62% from pre to merger year, and a 168% and a 335% NI increase from merger to post, and pre to post, respectively (see Table 2 Consolidated Data of Project Research, "Mean Delta" columns). The above figures were based on the average NI of all the 97 banks before their respective mergers, and compared it to the average NI of all the banks after their respective merger. The standard deviation from pre to post merger increased by 158%,

which indicates a significant mean variation, giving a distinct delineation between small and large banks according to their NI as depicted in Figure 5 Description of Data Net Income and Table 2 Consolidated Data of Project Research.

The standard deviation of the mean demonstrates the spread of the data around the mean; however the box plot apparently showed that the IQR post-merger decreased to $67.45M. Thus, the middle 50% of the observations has less variability after the merger. Thirteen of 46 data points are outliers that outperformed the average. These banks are located in France, Switzerland, Denmark, Turkey, and Croatia as shown in Figure 16, the Box Plot Net Income. The outliers indicates that the NI's mean of the 13 countries were higher or lower than the norm.

C. TOTAL ASSETS

Total Assets (TA) was examined to determine its behavior through the merger process. The banks' total assets may include physical substance, such as land and buildings, or the assets of a direct investment. A bank's fixed assets are regarded as tangible assets with a useful life in excess of one year. Current assets, on the other hand, are regarded as tangible assets with a life of one year or less, which can be readily turned into cash, for example, bank deposits, bills receivable and securities.

According to the data collected under this research, the 97 banks' mean for TA for the pre and merger years did not vary much. The mean was around $50M; however, post-merger, the research indicated a significant increase in total assets to $164M, representing an increase of 222.68% (pre to post). The standard deviation for pre and merger years was similar in range from $123M to $121M, respectively. The post merger's standard deviation was $314M. The standard deviation increased by 154% from pre to post merger indicating that there is more risk increasing TA through the merger process. Therefore, the information indicates a possibility of risk of bank mergers to acquire substantial assets successfully as depicted in Figure 6, Description of Data Total Assets and Table 2, Consolidated Data of Project Research.

Examining the box plot for TA, the assumption drawn from the standard deviation is confirmed. The box plot showed that the variability of the data is higher for the post-merger year than for the pre-merger year. The box plot apparently showed that the IQR post the mergers increased to $24,752M. This means that the middle 50% of the observations has higher variability post the merger. Ten banks of 47 data points collected are outliers that outperformed the average. These banks are located in France and Switzerland (see Figure 17. Box Plot Total Assets). The outliers indicates that TA's mean of the ten countries were higher or lower than the norm.

D. TOTAL LOANS

Banks should increase their loan accounts when they settle on a merger arrangement. According to Berger, DeYoung and Udell's research paper on Efficiency Barriers to the Consolidation of the European Financial Services Industry (2000), mergers and acquisitions have the potential to create value through gains in market power and/or efficiency gains. Marko Kosak and Peter Zajc suggest that banks generally could use their increased market dominance by manipulating services price (services that in turn become company's assets), thus securing more favorable funding conditions. By lowering the prices of its products, such as loans, banks can attempt to squeeze out the market share of other less competitive rivals, and discourage new entries. Banks can increase prices and enhance its revenues; however, when the market conditions allow.

Examining the data collected for this project, during the pre and the merger years, it appears there is little change in the banks' total loan accounts, having a mean around $13M to $14M, respectively. For the post year, however, the behavior changed. They increased their total loans to $35.8M, representing an increase of 168.1% (pre to post). Thus, there is a latent indication that the European banks that underwent a merger arrangement increased market power and/or efficiency gains. The standard deviation of the data indicates that there was risk involved when acquiring loan accounts from other banks. The standard deviation of the loan accounts increased by 83.09% between the pre-merger period and the post-merger period as depicted in Figure 7 (Description of Data Total Loans) and in Table 2 (Consolidated Data of Project Research).

The box plot apparently yields the same answer, having an IQR post the merger increased to $19253.4M. This means that the middle 50% of the observations has more variability post the merger. Eleven banks of 47 data points collected (outliers) outperformed the average. These banks are located in France and Switzerland (see Figure 18. Box Plot Total Loans). The outliers indicates that TL's mean of the 11 countries were higher or lower than the norm.

E. DEPOSITS AND SHORT-TERM FINANCE

Deposits and Short Term Finance (DSTF) are important for the money multiplier process in which the bank receives deposits from a customer, and then loans are made against deposits. If a bank is able to loan out its entire deposited cash from customers, the bank is essentially increasing the money supply.

According to the data in this research, the banks deposits and short-term investments likely stay constant during the pre-merger and the merger years. For the year post-merger, DSTF increased to $93.4M. The means during the pre and merger years were around $37M. By merging, the European banking industry increased their money multiplier ability by 152.7%. The standard deviation, which increased by 122.9% (pre to post), indicated that there was more risk involved through the merger process in terms of DSTF (see Figure 8. Description of Data Deposits & Short Term Finance and Table 2. Consolidated Data of Project Research).

The IQR post-merger increased to $19.4M. This means that the middle 50% of the observations has more variability post-merger. Ten of 48 banks outperformed the average. These banks are located in France, Switzerland, and Bulgaria (see Figure 19. Box Plot Deposits & Short Term Finance). The outliers indicates that DSTF's mean of the ten countries were higher or lower than the norm.

F. INTEREST EXPENSES PER DEPOSITS

Interest Expenses per Deposits (IE/D) are defined as the aggregate interest paid to customers by the European banks or the cost of money deposited. A research study conducted by G10, an organization for economic cooperation and development Report on

Consolidation in the Financial Sector (2001), found that higher concentration in banking markets might lead to less favorable conditions for customers (data from both European and U.S. banking sectors). Higher concentration in banking markets measures the degree to which few competitors dominate the market. Their report showed that the merging banks were in support of higher influence on market prices. Studies in the United States, Italy, and Switzerland, found that when market concentration increases within countries, there is a higher potential to cause a reduction in deposit interest rates or an increase in loan rates, which are conditions that may be less favorable to the customers. Contrary to the G10 report, in the European banking industry, it seems the customers received more for their deposits, and thus, mergers may not be motivated by IE/D.

For example, pre the mergers, the aggregate mean of IE/D paid out was 4.98%, and even though it decreased to 4.26% during the merger years, post the mergers IE/D paid out increased to 6.01%. By merging, the European banking industry increased their interest expense paid out on borrowed funds by 41.11% (merger to post). With the significant increase in the interest expense paid out to borrowers, the banks profit margin on loans could have decreased. IE/D standard deviation, on the other hand, indicates that there was more risk in merging. It went from 6.70% pre the mergers to 5.11% during the merger year, but it steeply increased to 11.42% post the mergers. The biggest standard deviation change was from the merger to the post-merger period, which represents a 70.45% change as shown in Figure 9: Description of Data Interest Expense per Deposits and in Table 2: Consolidated Data of Project Research).

There was more risk involved in bank mergers, according to IE/D standard deviation. However, the box plot shows that its impact could be minimal (see figure 18). The IQR post the merger decreased to 3.28%. This means that the middle 50% of the observations has less variability post the merger. In addition, five outliers were recorded post the mergers, which over performed for their customers. The countries showing outliers are Romania, Turkey, and France as shown in the Box Plot Interest Expense per Deposits (Aggregate) in figure 18. The outliers indicates that IE/D's mean of the five countries were higher or lower than the norm.

G. LOAN LOSS PROVISION PER LOAN

Ingram & Albright in *Financial Accounting* (2007), state that an accrued liability records the obligation to make payments for expenses that has been incurred. This provides the banking industry with a safety margin in case loans are defaulted. Thus, Loan Loss Provision per Loan (LLP/L) can be defined as a bank expense set aside as an allowance for expected bad debt or unpaid loans. The equivalent of this allowance for a manufacturing company would be the allowance set aside for returned cost of goods sold.

The data collected showed some changes in the way the European banking industry safeguarded against potential unpaid loans, assigning around 1% for LLP/L. For the merger year, they became negative, which may indicate they either issued fewer loans (a topic discussed in the Loans per Deposit section) or ran down their accrued liability accounts for unpaid loans. The standard deviation of the data increased significantly for the merger year, but significantly decreased post the merger. By merging, the European banking industry incurred risk for a very short period because the standard deviation decreased by 84.41% from the merger to the post year; then it went negative. Thus, the European banking industry kept their accrued liabilities for bad debt low and it seems there was not much risk involved in doing so (see Figure 10: Description of Data Loan Loss Provision per Loan and Table 2: Consolidated Data of Project Research).

In examining the box plot, it was found that variability is almost zero, just increasing IQR by 0.722% post the merger. This means that the middle 50% of the observations decreased, and thus, the data points seem to be less dispersed. Post the mergers, there were eight of 46 outliners, banks that over or under secured their loans provided. These countries are Romania, Russia, and the Republic of Serbia (see Figure 21: Box Plot Loan Loss Provision per Loan (Aggregate)). The outliers indicates that LLP/L's mean of the eight countries were higher or lower than the norm.

H. LOANS PER DEPOSITS

Loans per Deposits (LD) yields an indication of how many loans were generated from customer's deposits and short-term investments. The banking industry is in the

business of making money on interest loans. Thus, LD can be defined as the bank's ability to convert its cash (economic power) into profitable loans. The transaction transfers the assets accounts (cash from customers) and the liability accounts (that resulted from owing the customers their deposits) into sale revenues through customers obtaining loans. This is called the "money machine," according to *Principles of corporate finance* (8th ed.), page 37-38, by Brealey, R. A., Myers, S. C., & Allen, F. (2006).

Based on the data collected, the banking industry apparently maintained similar behavior issuing loans of deposits and cash generated from short-term investments. The means stayed close to 70% for all the years in consideration (pre, merger, and post). The standard deviation decreased significantly, conversely reducing the risks involved issuing loans. For the pre to post years, the standard deviation decreased from 65.35% to 30.89%, representing a decrease of 52.73%. (see Figure 11. Description of Data Loans per Deposits and Table 2. Consolidated Data of Project Research).

The box plot showed that the variability did not change, having an IQR around 40% for the pre and merger years, and around 50% for the post year. This means that the middle 50% of the observations were close and equally distributed. Post the merger there are no outliers (see Figure 22. Box Plot Loans per Deposits (Aggregate)).

I. RETURN ON ASSETS

"ROA is the ratio of net income to total assets." It can be defined as how profitable the company's assets are in generating revenues. Return on Assets (ROA) may be meaningful when compared to the industry ratio. If the ROA is improved after the mergers, it can be inferred that the European banking industry improved their ability to make a profit. If ROA decreases, however, it can be inferred that the mergers negatively affected the industry capability converting its assets into income, or contrarily, that there is potential for future growth. This is according to Ingram, R. W., & Albright, T. L. (2007) *Financial accounting: A bridge to decision making* (6ed.), page 364. Thus, ROA provides an indication of how well the banking system produces income for the stockholders.

The ROA showed that the European banking industry slightly lost its ability to create profits for the stockholders. ROA decreased from 1.21% to 0.79%, which represents a 35.28% decrease from the pre to the post year. On the other hand, the standard deviation for the merger and the post year stayed closely at 1.4%, while the pre year was 2.01%. This means that any apparent risk involved in the ability to convert assets to profits for the stockholders decreased during the merging process (see Figure 12. Description of Data Return on Assets and Table 2. Consolidated Data of Project Research).

The box plot apparently confirmed the inference drawn from the standard deviation. The IQR decreased to 0.608% for the post year. This means that the middle 50% of the observations was less spread post the mergers. Seven of 45 bank mergers outperformed the average (outliers) by having higher or less ROA than the average. These outliers banks are from the following countries: Romania, Russia, Turkey, and Bulgaria (see Figure 23. Box Plot Return on Assets (Aggregate)). The outliers indicates that ROA's mean of the seven countries were higher or lower than the norm.

J. TOTAL BRANCHES

Total Branches (TB) can be defined as the offices of a banking institution that are physically separated from the home office, but they provide the same deposits, loans and other banking services to customers.

Since the data collected with regard to TB was limited, it was not possible to draw meaningful statistical inferences. There were only 19 data points of 97 mergers for the pre and merger years and only eight data points for the post mergers (see Figure 13: Description of Data Total Branches and Figure 24 Box Plot Total Branches).

K. COST PER EMPLOYEES

Cost per Employee (C/E) can be defined as the amount of pay roll paid out by the banks to its employees. Banks probably provide the majority of its manpower needs to people in the local community, and thus, look for trends that show whether the community benefits from mergers (assuming that the number of laid off employees

remains at normal attrition rates). Focarelli, Panetta, and Salleo wrote a research paper named, Why do banks merger? (2002). In their research, they concluded that "after a merger, labor costs, and operating costs rise against gross income from the very first year and stay permanently higher."

The finding of this research paper is in agreement with Foracelli and his/her colleagues. According to the project's data, it seems the employee's payroll increased significantly (calculated by dividing personnel expenses by total employees). C/E increased from an aggregated mean of approximately $84K to $121K per year. The European banking industry increased their cost per employee by 44.5% (pre to post), and in exchange, they possibly were seeking better talent and experience, out-weighting the costs and time involved in the process of re-hiring and training employees. However, there was more risk in the process as the C/E standard deviation increased by 98.5%, pre to post (see Figure 14: Description of Data Cost per Employee and Table 2: Consolidated Data of Project Research).

The box plot confirmed the standard deviation claim, having an IQR post the merger increased to $168334.2M. This means that the middle 50% of the observations has higher variability post the merger. Two banks outperformed the average, by paying employees $556K per year. These banks are located in Switzerland (see Figure 25: Box Plot Cost per Employee). *Note: there were only 27 data points for C/E post the mergers, and thus, the statistical evidence of this inference may be questionable (only pre to post and merger to post).* The outliers indicates that C/E's mean of the two countries were higher or lower than the norm.

L. TOTAL OPERATING COSTS

According to Amihud, DeLong, and Saunders in their research work, The Effects of Cross-Border Bank Mergers on Bank Risk and Value (2002), they claim that a reason why a cross-border merger and acquisitions might increase an acquiring bank's risk is the question of

> who is watching the eggs in the basket" Winton (1999). What is the best course of action? Is it to diversify in other geographical areas or specialize with-in a few sectors when banks take on new capital ventures? They also contend "extending its operations into new overseas markets, the (domestic) bank is confronted with potentially new and risk increasing monitoring problems related to the loan customer base, the operating cost structure, etc... of the target bank.

According to the project's research data, it seems that for the post year, TOC significantly increased to $61.5M. The means for the pre and merger years were approximately $17M and $19M, respectively. By merging, therefore, the European banking industry increased their total operating cost by 270% (pre to post). Mergers potentially create diversification of products within the financial institution, justifying the higher costs. Knowing that the total operating costs tend to increase post-merger, a risk flag is raised, and examining the standard deviation of the data, this assumption is proven. The standard deviation significantly increased by 163.9%, pre to post. (Figure 15. Description of Total Operating Cost and Table 2. Consolidated Data of Project Research).

The TOC IQR increased to $21,905M using the box plot statistics. This means that the data points post the mergers have higher variability than during the merger and pre the merger years. In more statistical terms, the middle 50% of the observations has more variability post the merger. Nine banks, on the other hand, outperformed the average. These banks are located in France, Switzerland, and Bulgaria (see Figure 26. Box Plot Total Operating Cost). The outliers indicates that TOC's mean of the nine countries were higher or lower than the norm.

For a summary of the means and the standard deviations direction of the variables (positive of negative) see Table 9 Variable Summary.

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IV. ANALYSIS OF THE DATA

To analyze the data collected from Bankscope, the Coefficient of Correlation (CoC), regression statistics, and Little's Law (LL) were used. CoC provided the direction of the relationship between two variables. Regression, the second statistical technique used, established the relationships between two variables. LL, in addition, was utilized to identify the actual benefits of merging.

A. COEFFICIENT OF CORRELATION ANALYSIS

The Coefficient of Correlation Analysis (CoCA) provides a measurement of linear relationship between two interval variables. Interval variables, as described by statistics books, are real numbers (or quantitative data) that delineates characteristics of the population or sample. The data collected for this research project is interval.

CoC has upper and lower limits, -1 and +1. When the CoC is equal to +1, it can be inferred that there is a positive relationship between the two variables under study, but the contrary applies when the CoC is -1. When the CoC equals 0, then the inference is that no linear relationship exists between the variables, (see Table 3. Correlation Pre Data and Table 4. Correlation Post Data).

1. Net Income (NI)

The relationship between NI and the areas of interest examined by this research paper were studied, but only for the pre and post the mergers. The most significant relationship to NI was C/E and TOC. It was discovered that if the European banking industry produces more NI after the mergers, then C/E and TOC would most likely increase. Also, inferred was that if the industry does not expect to produce more NI for the shareholders, then the merger should not be accomplished. Before the mergers, C/E and TOC were lightly negative and moderately positive, respectively. After the mergers, C/E and TOC became strongly positive.

2. Total Assets (TA)

If TA is expected to increase because of the mergers, then the banking industry should expect an increase in the TL accounts, and thus, investment (through DSTF) will most likely improve. The same behavior should be expected for C/E and TOC. Those areas that were positive, negative, or indifferent to TA continue the same behavior post the mergers. The relationships that were positive though (TL, DSTF, C/E, and TOC) became stronger.

3. Total Loans (TL)

If the banking industry expects to increase their ability to generate income through new loans (TL), and then income through investments (DSTF), the costs of operations will most likely increase (C/E and TOC). The correlation between TL and areas of interest, excluding NI and TA, shows the same linear relationship found by the TA analysis. The relationships that were positive (DSTF, C/E, and TOC) became stronger.

4. Deposits and Short Term Funding (DSTF)

The industry operating costs (C/E and TOC) will most likely increase if DSTF increases. In those areas that had a positive or negative behavior to DSTF, their relationship became stronger.

5. Interest Expenses per Deposit (IE/D)

This section provides information on the relationship between IE/D and the areas of interest, excluding NI, TA, TL, and DSTF. The correlation between IE/D and the areas of interest was very diverse. For example, the relationship between IE/D and L/D, changed from positive to no relationship. The correlation between IE/D to LLP/L and ROA changed from no relationship to negative and positive, respectively.

Using this data, significant information can be inferred. For example, the banking industry paid more in interest per deposits as they generated more loans from deposits

(L/D), pre the mergers. Post the merger, however, the data shows that as the banking industry increases its L/D, the interest paid to customers will most likely stay the same. This means the customers will most likely get no more, perhaps no less, for their money saved at the bank.

In addition, would the banks pay less interest (IE/D) if they increase their LLP/L accounts? Pre the merger, the answer was no because there is no relationship; however, post the merger the answer is probably yes. The data suggest (post the merger) that if the banking industry allocates assets to safeguard against bad debt, then the customer will probably receive less interest paid out for their money deposited in the bank. For ROA, on the other hand, as the bank's ROA increases, the interest pay out to customers (IE/D), post the merger, will most likely increase.

The relationship between IE/D to C/E and TOC changed to no relationship and slightly positive, respectively, post the merger. Even though there is a positive relationship between the IE/D and the TOC, the feeling is that there is no practical information that can be drawn from this relationship. This premise is based on the following question: why would the customer receive more for their money deposited in the bank if the TOC of the banking system increased?

6. Loan Loss Provision per Loan (LLP/L)

If the banking industry costs increases, then there is less money available to cover bad debts. There was a weak negative linear relationship between LLP/L and C/E and TOC. ROA to LLP/L and its negative correlation became stronger post the merger.

7. Loan per Deposits (L/D)

The most significant change was the ROA. As the L/D increases because of the mergers, the ROA should also improve. Pre the merger, the correlation between L/D and ROA was slightly negative. Post the merger, however, this relationship became slightly positive. The bank mergers, from the L/D point of view, improved an industry that could not turn around its assets.

8. Return on Assets (ROA)

The European banking industry performance controlling cost on employees and operating costs improved, even though both costs increased post the mergers. The relationship of ROA to C/E and TOC correlation changed from moderate negative to slightly negative.

9. Cost per Employee (C/E)

The correlation between C/E and TOC significantly improved from moderately positive to strongly positive after the mergers. This is bad news for the European banking industry because the cost of operations will most likely be higher post the merger. This area would need strategy and management oversight. As stated in the previous paragraphs, employee's salaries (C/E) will certainly increase because of the mergers, and thus, efforts should focus on not controlling the cost of operations, which is the most significant cost. Cost should increase during the merger year inherited from the acquired institution, but should be carefully managed so it does not affect the merger in the short and long-term horizons.

B. REGRESSION ANALYSIS

CoCA provided the behavior trend "up or down" of various areas; however, the magnitude of the trends can only be answered by regression statistics, which is used by statisticians to predict future outcomes based on past performance. Thus, Regression Analysis (RA) is an instrument that also establishes relationships between two variables.

This section analyzes the regression equations for the following areas: NI, DSTF, TA, and TL, which are the independent variables "X". These subjects are chosen because NI indicates profitability, DSTF is the source to create money, TA provides the industry's potential for future growth, and TL shows the bank's ability to conduct business. These independent variables "X" were arbitrarily selected based on their linear relationship to the other variables (dependable variables "Y"), using the following question: how would a change in X factor (i.e., NI or TA) affect the Y factor (i.e., C/E or

TOC)? If there were apparent benefits that can be drawn from this question, then the regression formula was obtained using regression analysis from Excel. Excel calculated the best straight line that fits the data assuming there was a linear relationship, (see Table 5: Regression Analysis, for the details discussed in this section).

1. Net Income (NI) Regression Analysis

The RA indicates that NI can significantly affect the bank's TA, TL, C/E, and TOC. Post the mergers, for every $1M increase in NI, TA increased by $182M, TL increased by $33M, C/E increased by $59K, and TOC increased by $71M, (see Table 5: Regression Analysis, for the details discussed in this section).

2. Deposits and Short Term Finance (DSTF) Regression Analysis

Even though DSTF is needed to create money, its RA shows that it may not significantly affect the bank's finances with the exception of TA. Post the mergers, for every $1M increase in DSTF, NI increased by only $7,300, TA increased by $1.7M, C/E increased by only $554, TL decreased by $282K, and TOC increased $557K, (see Table 5: Regression Analysis, for the details discussed in this section).

3. Total Assets (TA) Regression Analysis

The RA for TA demonstrates the banks' cost against the industry's potential for future growth (TA) to be justifiable. C/E increased almost insignificantly, but TOC increased by a suitable figure. Post the mergers, for every $1M increase in TA, C/E increased by only $309, and TOC increased by only $333K, (see Table 5: Regression Analysis, for the details discussed in this section).

4. Total Loans (TL) Regression Analysis

TL, the bank's ability to conduct business, is apparently one of the most important aspects of mergers after NI. Post the mergers, for every $1M increase in TL, C/E increased by only $1,340, TOC drastically increased by $1.72M (a red flag for merging),

but TA increased favorably by $4.9M. TA outweighs the costs of operations (see Table 5: Regression Analysis, for the details discussed in this section).

C. LITTLE'S LAW ANALYSIS

Little's Law (LL) is a significant formula that describes the behavior of waiting in line (queuing). The law establishes a linear relationship of the average number of customers to their arrival rate times the average time waiting in line. In other words, the law says that the average number of customers in a stable system, over a period of time, is equal to the customer's arrival rate multiplied by the customers' average time waiting in the system. The formula applies to the system as a whole and to the subsystems of the main system (a system within the system). However, three assumptions are made: the system is independent on any other probability in the system; the system operates on a First Come First Served (FCFS); and the system is in a stable stage, meaning it cannot be in a period of transition such as starting up or shutting down. Little's Law Formula: Inventory (I) = Rate (R) x Time (T)

1. Little's Law Case

LL can yield useful information, if the European mergers are perceived as a production line processing loans and other services. Therefore, a LL analysis was conducted using NI and assuming the mergers are a whole system. The period of transition, the merger year, was disregarded. It was assumed that the industry works 250 days of the year (T), having 365 days in a year. The mean NI (pre and post) were used as the rates, while the inventory cost was assumed to be 20% (see Table 6 Little's Law Case Calculations).

The European banking system was able to generate $654.01M per year in NI by merging. Their inventory cost was $89.59M. Thus, the actual net gain in NI was $564.42M per year. This is substantially large and highly beneficial to the health of the European region. If the European banking system is to be seen as a significant world competitor, the world region interested in matching or competing with this banking

environment needs to improve the region's NI by more than $564.42M per year in NI to be competitive. TA, in addition, may be an area that needs to be seriously considered as it represents future growth, an area in which the European mergers over-excelled.

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V. CONCLUSIONS

A. SUMMARY OF RESEARCH

As presented in Chapter I (background), in today's competitive banking industry, many European banks have merged and this has changed the European banking industry landscape. Mergers may increase current earnings per share, but it does not necessarily mean that the long run earnings will also be profitable. In fact, according to recent findings through research, many companies have experienced a slower rate of future growth after merging.

Thus, there are many reasons why there has been a wave of mergers in the European banking industry. Big banks may target smaller banks because of their lack of resources and difficulty in obtaining such resources. Mergers may also occur because of inefficiencies within their management or processes.

By merging with bank(s) that have talented management and exceptional processes, big banks can potentially save significant cash and acquire an additional competitive advantage. As discussed in Chapter II (literature review), according to speakers at the rating's agency Standard & Poor's Global Bank Conference entitled 'Facing uncertainty from a position of strength', held at the end of 2006,

> The national consolidation of banks has produced stronger franchises and generated huge synergies for them while also creating leading players in several countries. Cross-border mergers and acquisitions, on the other hand, have opened up new growth opportunities for banks - particularly within Western Europe and Central and Eastern Europe (CEE) - as well as in the United States.

This study has explored the European bank mergers from 1997 to present. This research project was primarily based on data extracted from 97 European banks from the Bankscope database, which is a complete financial analysis tool that combines

information from over 13,000 world banks with a financial analysis software program. The project's research in European banking industry focused on the following areas of investigation:

1. Net Income
2. Total Assets
3. Total Loans
4. Deposits and Short Term Finance
5. Interest Expense per Deposits (Aggregate)
6. Loan Loss Provision per Loans (Aggregate)
7. Loans per Deposits (Aggregate)
8. Return on Assets (Aggregate)
9. Total Branches
10. Cost per Employees
11. Total Operating Costs

B. RESULTS OF RESEARCH

1. Net Income (NI)

The NI of the European banks post mergers showed a 335% increase in NI or an average of $849M annually. The variability of post-merger net income increased by 158%, which is significant, and provides a distinct delineation between small and larger banks according to their NI. The coefficient of correlation analysis (CoCa) shows that after the mergers, there is a positive relationship between NI and C/E & TOC. The regression analysis (RA) shows that for every $1M increase in NI, there is a significant increase in TA, TL, C/E and TOC. Of the 97 banks analyzed, three of the banks outperformed the rest on average. The banks are located in France, Switzerland, Denmark, Turkey, and Croatia.

2. Total Assets (TA)

The TA of post mergers of the European banks showed a 223% increase or $164M annually on average. There was an increase in variability of total assets in the

post-merger period of 154% for bank mergers to acquire additional assets successfully. The CoCa shows that after the mergers, there is a strong positive relationship between TA and TL, DSTF, C/E and TOC. The RA shows that for every $1M increase in TA, there is a significant increase in TOC. Of the 97 banks analyzed in this area, ten of the banks outperformed the rest on average. The banks are located in France and Switzerland.

3. Total Loans (TL)

The TL for the post year mergers indicated that the European banks showed an increase of 168% or $36M on average annually. There was an 83% increase in the variability of total loans following the mergers, relative to the period preceding the mergers. The CoCa shows that after the mergers, there is a strong positive relationship between TL and DSTF, C/E, and TOC. The RA shows that for every $1M increase in TL, there is a significant increase in TL and TOC; however, the TA increased enough to compensate for the cost. Of the 97 banks analyzed in this area, eleven of the banks outperformed the rest on average. The banks are located in France and Switzerland.

4. Deposits and Short Term Finance (DSTF)

The DSTF of the post-merger years of the European banks had showed an increase of 153% or $93M on average annually. Risk, as measured by the standard deviation, increased by 123% for the post-merger years. The CoCa shows that after the mergers, there is a strong positive relationship between DSTF and C/E & TOC. The RA shows that for every $1M increase in DSTF, there is a somewhat significant increase in NI, TA, C/E, and TOC, and slightly decreases in TL. Of the 97 banks analyzed in this area, ten of the banks outperformed the rest on average. The banks are located in France, Switzerland and Bulgaria.

5. Interest Expenses per Deposits (IE/D)

The IE/D of the post year mergers indicated an increase by 41% of expenses paid out on borrowed funds by the European banks, thus, affecting the bank's potential profit

margin, but benefiting the customer. The risk increased by 70%; however, there was an added benefit of an increased number of depositors. The CoCA provides many inferences for IE/D with ROA being the most significant. The customers, based on L/D, would not receive more or less paid out in interest. If LLP/L increases, they will most likely receive less interest paid and if the bank's ROA increases, they will most likely receive more interest paid. There is not a positive relationship to TOC due to the lack of practical information that can be drawn from an IE/D to TOC relationship.

The RA was not applicable to this area of analysis because it is not a direct source of money for the mergers. Of the 97 banks analyzed in this area, five of the banks outperformed the rest on average. The banks are located in Romania, Turkey, and France.

6. Loan Loss Provision per Loans (LLP/L)

The LLP/L data indicated that European banks assign around 1% for LLP/L, which is used to safeguard against potential unpaid loans. There was a reduction in risk of 84%, which postulates that European banks maintain low accrued liabilities for bad debt. The CoCa shows that after the mergers, a negative relationship exists between LLP/L and C/E, TOC and ROA. The RA was not applicable to this area of analysis because it is not a direct source of money for the mergers, but is a way to insure for future uncertainty. Of the 97 banks analyzed in this area, eight of the banks outperformed the rest on average. The banks are located in Romania, Russia, and the Republic of Serbia.

7. Loans per Deposits (L/D)

The L/D of the European banks post mergers showed a continued 70% on average. The data indicates that the pattern of issuing loans of deposits and cash generated from short-term investments was unchanged after the post mergers within the European industry. The risk of L/D's decreased by 53%, which shows that their procedure for generating loans was in place to control the risk associated with mergers. The CoCa shows that there was a slight positive relationship between L/D and ROA. The

RA was not applicable to this area of analysis because it is not a direct source of money for the mergers, but the instrument to make money. No banks outperformed the average.

8. Return on Assets (ROA)

The ROA of the European banks post mergers showed an average decrease of 35% on ROA, and thus, slightly lost their ability to create profits for the stockholders. The risk of the ROA had decreased by 1.4% showing that the ability to convert assets to profits for the stockholders is low after the post mergers within the European banking industry. The CoCa shows that there was a negative relationship between ROA and C/E & TOC. The RA was not applicable to this area of analysis because it is not a direct source of money for the mergers, but a finance or performance indication. Of the 97 banks analyzed in this area, seven of the banks outperformed the rest on average. The banks are located in Romania, Russia, Turkey, and Bulgaria.

9. Total Branches (TB)

Due to the limited data available for TB, it was not possible to draw meaningful statistical inferences.

10. Cost per Employees (C/E)

The C/E of the European banks post mergers showed a 45% increase in C/E or an average of $121K annually. The risk post mergers increased by 99%, which indicates that employee salaries will tend to increase, and thus, affecting the cost of operations due to the mergers. The CoCA shows a positive relationship between C/E and TOC. The RA was not applicable to this area of analysis because it is not a direct source of money for the mergers, but an indication of costs. Of the 97 banks in this area, two of the banks outperformed the rest on average. The banks are located in Switzerland.

11. Total Operating Costs (TOC)

The TOC for the post year showed a 270% increase or an average of $61.5M annually. The risk to TOC increased by 164% post the mergers and can be attributed to

the increase of the potentially diversification of products and services due to the merger; however, this does raise a red flag knowing that TOC tend to increase after mergers. The CoCa and the RA was not applicable to this area of analysis because it is not a direct source of money for the mergers. Of the 97 banks analyzed in this area, nine of the banks outperformed the rest on average. The banks are located in France, Switzerland and Bulgaria.

12. Little's Law (LL) Case

According to the Little's Law analysis, there is an overwhelming benefit in merging. Mergers in the European banking industry show that the actual gain in Net Income was $564.42M. This reinforces the fact that bank mergers within Europe have proven to be global banking powerhouses and are thriving competitors in the world of banking.

VI. ASSESSMENT

A. FURTHER ANALYSIS OF OVER-PERFORMERS

- **Conduct Further Analysis of Financial Performance of the European Banks that Outperformed the Average**

This project's research shows that few countries outperformed the average in the European banking mergers during the last 10 years. Thus, further research should be conducted to determine the reasons, the process, the strategies, and principles behind such performance. This research identified France and Switzerland as the two primary countries that outperformed the average. These two countries exceeded its competition in NI, TA, TL, DSTF, and TOC. Romania and Russia dominated ROA and LLP/L. ROA is worth a look because it delineates future growth; the potential roots of a powerful banking system (see Table 7: Outperformer Countries).

B. FURTHER ANALYSIS OF NET INCOME

- **Conduct Further Analysis Seeking for Reasons of the Merger's NI Increase Despites of Higher Operating Costs**

Mergers seem to provide higher NI for the stockholder even though their TOC and C/E steeply increase after the mergers. Thus, further analysis is suggested into the reasons why the NI significantly increases post the mergers. The literature review found that banking systems looking to merge do so because of economies of scales, the ability to improve their processes, obtaining resources that otherwise could not be obtained, the lack of resources, inefficiencies within their management or processes, competitive advantage, etc. The belief is that there are economic factors influencing a NI increase, not just the reasons found through the literature review, and because of the complexity that can influence NI after bank mergers, further studies in NI and European banking mergers are recommended.

C. FURTHER ANALYSIS OF TOTAL ASSETS

- **Conduct Further Analysis of TA Post the Mergers**

TA needs to be seriously considered as it represents future growth, an area in which the European mergers over-excelled. For every $1M increase in TA, N increases by $182M. The study should concentrate on the years post the mergers. For example, if the post year of the mergers happened in 2002, then further analysis can be performed from 2002 to 2007 for all 97 banks if there is enough significant statistical data upon which to draw inferences.

D. FURTHER ANALYSIS OF INTEREST EXPENSES PER DEPOSITS

- **Conduct Further Research on IE/D and Its Distinct Behavior in Relation to ROA**

Post the mergers, IE/D increased to 6.01%, a fact that benefited the customers of the banking industry. This is in sync with the project's literature review, research conducted by an organization for economic cooperation, Report on Consolidation in the Financial Sector, which found that higher concentration in banking markets might lead to less favorable conditions for customers. Mergers seem to eliminate such concentration, benefiting the customers. Post the mergers, however, the CoCA shows that the relationships of IE/D to other areas of interest in this research project were somewhat erratic. For example, the correlation between IE/D to LLP/L and ROA changed from no relationship to negative and positive, respectively. Thus, further research on IE/D and its distinct behavior in relation to ROA should be conducted.

E. FURTHER ANALYSIS OF BANKS CONTROLLING THE MARKET

- **Conduct Further Analysis on Banking Systems Having Some Control on Its Neighbor Banking System**

Further analysis on banking systems having some control on its neighbor banking system is recommended based on the findings using the Thompson database.

Thompson's database, the secondary database, utilized only for literature review, identified few countries having control over other banking systems outside their own territory.

In the selling arena, the Belgium banking system sold 23.62% of its bank available for sale to the Netherlands. The Netherlands sold 15% of its banks available for sale to Belgium. Poland sold 16.3% of its banks available for sale to Germany. Portugal sold 18.49% of its bank available for sale to Spain.

In the buying arena, the Netherlands acquired 21.58% of Belgium banks available for sale. Belgium acquired 14.07% of France's banks available for sale. In addition, Portugal acquired 11.45% of Spain's banks available for sale (see Table 8. Cross Border Bank Mergers). Table 8 provides a summary tabular representation of countries having some kind of control over its neighbor's banking system.

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APPENDIX A. TABLES

Table 1. Structure of the German Banking Sector

(Source: Deutsche Bundesbank)

	1999	2000	2001	2002	2003
Total Number of Banks	*3168*	*2 733*	*2 518*	*2 418*	*2235*
Commercial Banks	**290**	**314**	**304**	**354**	**261**
Grossbanken	4	4	4	4	4
Regionalbanken	199	223	221	245	173
Foreign bank subsidiaries	87	87	79	105	84
Landesbanken	13	13	13	13	13
Savings Banks	**578**	**562**	**534**	**519**	**489**
Genossenschaftliche Zentralbanken	4	3	2	2	2
Cooperative Banks	2035	1 795	1 621	1 490	1393

Table 2. Consolidated Data of Project Research

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

	Mean			Mean Delta		
	Pre	Merger	Post	Pre to Merger	Merger to Post	Pre to Post
Net Income (M)	$ 195.19	$ 316.82	$ 849.20	62.32%	168.04%	335.06%
Total Assets (M)	$ 51,050.58	$ 50,836.43	$ 164,729.66	-0.42%	224.04%	222.68%
Total Loans (M)	$ 13,374.96	$ 14,044.37	$ 35,863.72	5.00%	155.36%	168.14%
Deposits & Short Term Finance (M)	$ 36,972.77	$ 37,472.19	$ 93,430.31	1.35%	149.33%	152.70%
Interest Expense per Deposits (Aggregate)	4.98%	4.26%	6.01%	-14.36%	41.11%	20.85%
Loan Loss Provision per Loan (Aggregate)	0.65%	-2.71%	1.27%	-519.38%	-146.85%	96.47%
Loans per Deposits (Aggregate)	71.63%	69.83%	68.88%	-2.51%	-1.36%	-3.84%
Return on Assets -- ROA (Aggregate)	1.21%	1.20%	0.79%	-0.86%	-34.72%	-35.28%
Total Branches	108	54	318	-49.68%	484.56%	194.13%
Cost per Employee (Ths)	$ 84,062.81	$ 92,199.48	$ 121,535.19	9.68%	31.82%	44.58%
Total Operating Cost (M)	$ 16,645.43	$ 19,133.06	$ 61,593.72	14.94%	221.92%	270.03%

	Standard Deviation			Standard Deviation Delta		
	Pre	Merger	Post	Pre to Merger	Merger to Post	Pre to Post
Net Income (M)	$ 601.22	$ 887.49	$ 1,551.24	47.62%	74.79%	158.02%
Total Assets (M)	$ 123,743.60	$ 121,955.30	$ 314,571.90	-1.45%	157.94%	154.21%
Total Loans (M)	$ 31,045.35	$ 32,864.33	$ 56,839.61	5.86%	72.95%	83.09%
Deposits & Short Term Finance (M)	$ 81,753.32	$ 84,379.31	$ 182,229.39	3.21%	115.96%	122.90%
Interest Expense per Deposits (Aggregate)	6.70%	5.11%	11.42%	-23.68%	123.33%	70.45%
Loan Loss Provision per Loan (Aggregate)	6.34%	34.44%	5.37%	443.48%	-84.41%	-15.25%
Loans per Deposits (Aggregate)	65.35%	34.11%	30.89%	-47.80%	-9.44%	-52.73%
Return on Assets -- ROA (Aggregate)	2.01%	1.47%	1.43%	-26.51%	-2.69%	-28.48%
Total Branches	178	48	404	-73.14%	744.60%	126.86%
Cost per Employee (Ths)	$ 77,666.00	$ 86,616.60	$ 154,519.98	11.52%	78.40%	98.95%
Total Operating Cost (M)	$ 43,838.01	$ 48,821.30	$ 115,718.78	11.37%	137.03%	163.97%

Table 3. Correlation Pre Data

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)
Note: There was not enough statistical data available to draw firm inferences from the total branches population in the European mergers banking industry.

Correlation Pre Data											
	Pre (NI)	*Pre (TA)*	*Pre (TL)*	*Pre (DSTF)*	*Pre (IE/D)*	*Pre (LLP/L)*	*Pre (L/D)*	*Pre (ROA)*	*Pre (TB)*	*Pre (C/E)*	*Pre (TOC)*
Pre (NI)	1.00										
Pre (TA)	0.37	1.00									
Pre (TL)	0.38	0.76	1.00								
Pre (DSTF)	0.29	0.93	0.76	1.00							
Pre (IE/D)	-0.02	-0.03	0.00	-0.06	1.00						
Pre (LLP/L)	-0.03	-0.01	-0.01	-0.01	0.01	1.00					
Pre (L/D)	-0.15	-0.22	-0.07	-0.25	0.28	0.05	1.00				
Pre (ROA)	-0.02	-0.17	-0.16	-0.17	0.06	-0.69	-0.09	1.00			
Pre (TB)	0.33	0.00	0.05	0.00	0.42	-0.08	-0.36	0.18	1.00		
Pre (C/E)	-0.13	0.58	0.46	0.65	-0.13	-0.25	-0.22	-0.17	0.30	1.00	
Pre (TOC)	0.31	0.75	0.65	0.72	-0.04	0.00	-0.17	-0.12	0.21	0.68	1.00

Table 4. Correlation Post Data

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)
Note: There was not enough statistical data available to draw firm inferences from the total branches population in the European mergers banking industry.

Correlation Post Data											
	Post (NI)	*Post (TA)*	*Post (TL)*	*Post (DSFT)*	*Post (IE/D)*	*Post (LLP/L)*	*Post (L/D)*	*Post (ROA)*	*Post (TB)*	*Post (C/E)*	*Post (TOC)*
Post (NI)	1.00										
Post (TA)	0.89	1.00									
Post (TL)	0.93	0.90	1.00								
Post (DSFT)	0.87	1.00	0.87	1.00							
Post (IE/D)	0.12	-0.05	-0.02	-0.06	1.00						
Post (LLP/L)	-0.14	-0.13	-0.15	-0.13	-0.04	1.00					
Post(L/D)	-0.53	-0.58	-0.42	-0.59	0.02	-0.07	1.00				
Post (ROA)	-0.05	-0.12	-0.11	-0.12	0.30	-0.82	0.06	1.00			
Post (TB)	0.68	0.90	0.90	0.87	0.92	-0.26	0.49	0.23	1.00		
Post (C/E)	0.90	0.82	0.74	0.83	0.00	-0.18	-0.57	-0.09	0.49	1.00	
Post (TOC)	0.99	0.92	0.93	0.89	0.11	-0.13	-0.54	-0.08	0.82	0.83	1.00

Table 5. Regression Analysis

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

Regression Data				
Independable Variable (X)	Dependent Variable (Y)	Linear Relationship (Pre to Pre)	Linear Relationship (Post to Post)	Slopes Delta
Net Income (M)	Total Assets (M)	y = 77.787x + 35284	y = 181.94x + 6546.4	134%
	Total Loans (M)	y = 19.634x + 9247.6	y = 33.056x + 4065.2	68%
	Cost per Employee (Ths)	y = -15.856x + 54997	y = 59.156x + 10006	273%
	Total Operating Cost (M)	y = 22.681x + 11669	y = 71.118x - 700.68	214%
Deposits & Short Term Finance (M)	Net Income (M)	y = 0.0021x + 111.48	y = 0.0073x + 63.342	248%
	Total Assets (M)	y = 1.4142x - 1210.7	y = 1.7077x + 862.46	21%
	Cost per Employee (Ths)	y = 0.452x + 35632	y = 0.554x + 8216	23%
	Total Loans (M)	y = 0.2889x + 2501.6	y = 0.2824x + 4323.1	-2%
	Total Operating Costs (M)	y = 0.3813x + 2152.7	y = 0.5573x + 2172	46%
Total Assets (M)	Cost per Employee (Ths)	y = 0.2232x + 40836	y = 0.3089x + 9173.4	38%
	Total Operating Costs (M)	y = 0.262x + 2861.9	y = 0.3325x + 1402.3	27%
Total Loans (M)	Cost per Employee (Ths)	y = 0.8452x + 41042	y = 1.3405x + 10535	59%
	Total Operating Costs (M)	y = 0.9172x + 4071.6	y = 1.72x - 1948.7	88%
	Total Assets (M)	y = 3.0481x + 10491	y = 4.9009x - 5347.1	61%

Table 6. Little's Law Case Calculations

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

Little's Law Calculations

	Pre		**Post**
Net Income (Mean per Year in Millions) -- Rate	$ 195.19		$ 849.20
Days of Operation -- Time		250	
Work in Process in Millions -- I	$ 133.69		$ 581.65

Inventory in the System	$ 447.95
Inventory Carrying Cost	20%
Inventory Loss	$ (89.59)

NI Gain due to Merging	$ 654.01
Carrying Cost Loss	$ (89.59)
NI Actual Gain	$ 564.42

Table 7. Outperformer Countries

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

Area of Interest	Countries
Net Income (M)	France, Switzerland, Denmark, Turkey, Croatia
Total Assets (M)	France Switzerland
Total Loans (M)	France Switzerland
Deposits & Short Term Finance (M)	France, Switzerland, Bulgaria
Interest Expense per Deposits (Aggregate)	Romania, Turkey, France
Loan Loss Provision per Loan (Aggregate)	Romania, Russia, the Republic of Serbia
Loans per Deposits (Aggregate)	None
Return on Assets -- ROA (Aggregate)	Romania, Russia, Turkey, Bulgaria
Total Branches	N/A
Cost per Employee (Ths)	Switzerland
Total Operating Cost (M)	France, Switzerland, Bulgaria

Table 8. Cross Border Bank Mergers

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Thompson Database)

Country	**Sold To:**	**Acquired Of:**
Belgium	Netherlands	
Netherlands	Belgium	
Poland	Germany	
Portugal	Spain	
Netherlands		Belgium
Belgium		France
Portugal		Spain

Table 9. Variables Summary

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Thompson Database)

	Mean Delta		
	Pre	**Merger**	**Post**
Net Income (M)	+	+	+
Total Assets (M)	-	+	+
Total Loans (M)	+	+	+
Deposits & Short Term Finance (M)	+	+	+
Interest Expense per Deposits (Aggregate)	-	+	+
Loan Loss Provision per Loan (Aggregate)	-	-	+
Loans per Deposits (Aggregate)	-	-	-
Return on Assets -- ROA (Aggregate)	-	-	-
Total Branches	-	+	+
Cost per Employee (Ths)	+	+	+
Total Operating Cost (M)	+	+	+

	Standard Deviation Delta		
	Pre	**Merger**	**Post**
Net Income (M)	+	+	+
Total Assets (M)	-	+	+
Total Loans (M)	+	+	+
Deposits & Short Term Finance (M)	+	+	+
Interest Expense per Deposits (Aggregate)	-	+	+
Loan Loss Provision per Loan (Aggregate)	+	-	-
Loans per Deposits (Aggregate)	-	-	-
Return on Assets -- ROA (Aggregate)	-	-	-
Total Branches	-	+	+
Cost per Employee (Ths)	+	+	+
Total Operating Cost (M)	+	+	+

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APPENDIX B. FIGURES

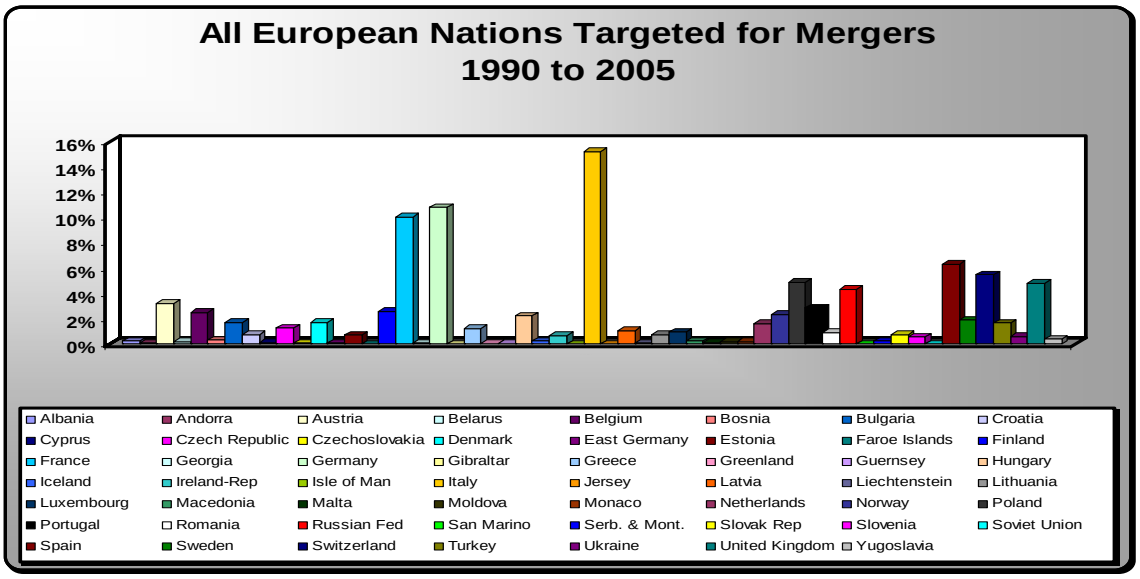


Figure 1. All European Nations Targeted for Mergers 1990 to 2005

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

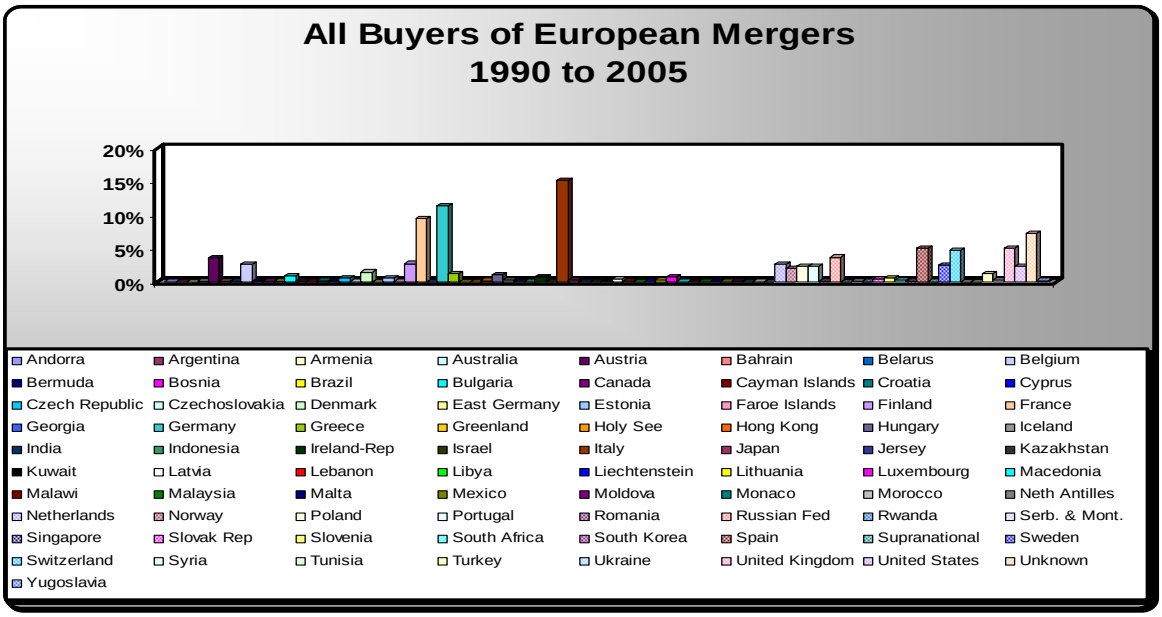


Figure 2. All Buyers of European Mergers 1990 to 2005

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

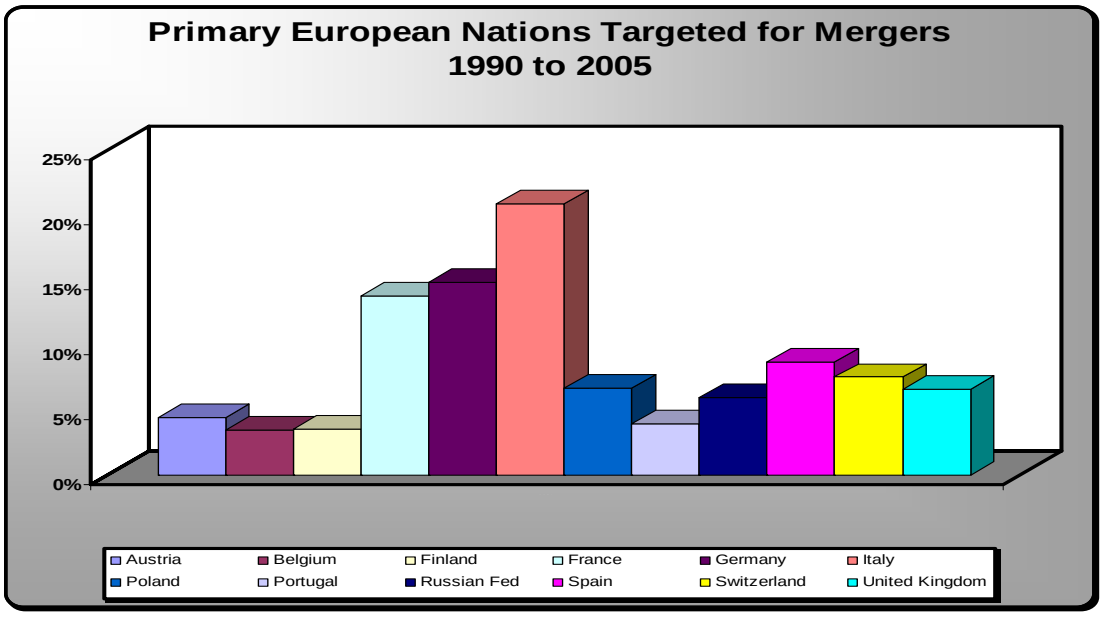


Figure 3. Primary European Nations Targeted for Mergers 1990 to 2005

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

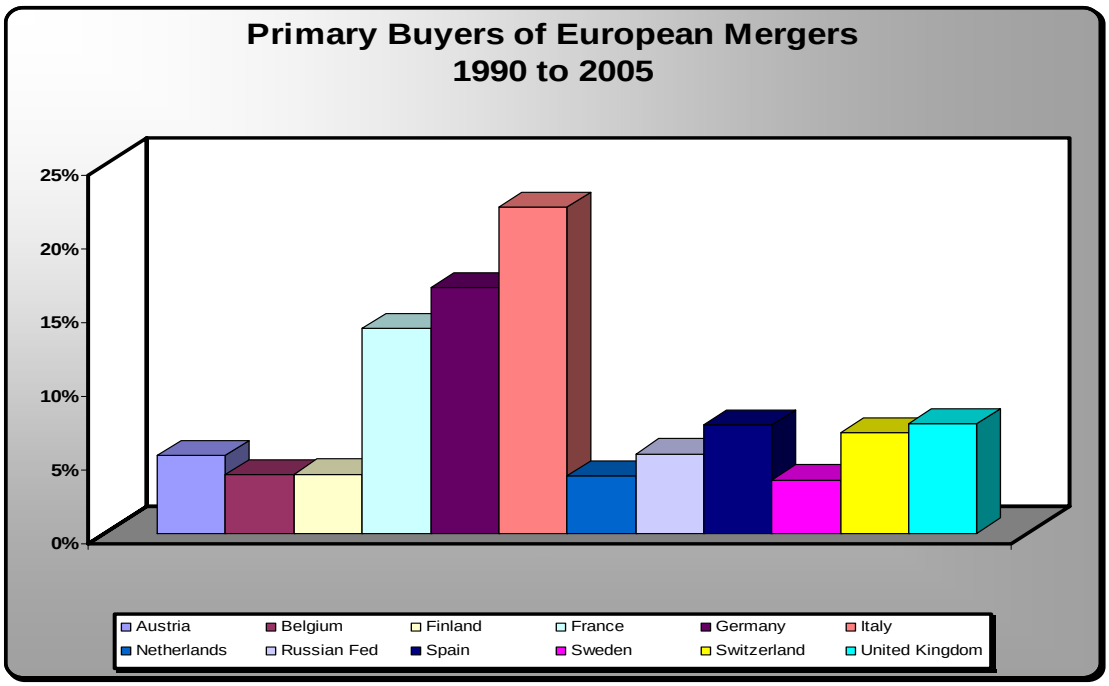


Figure 4. Primary Buyers of European Mergers 1990 to 2005

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

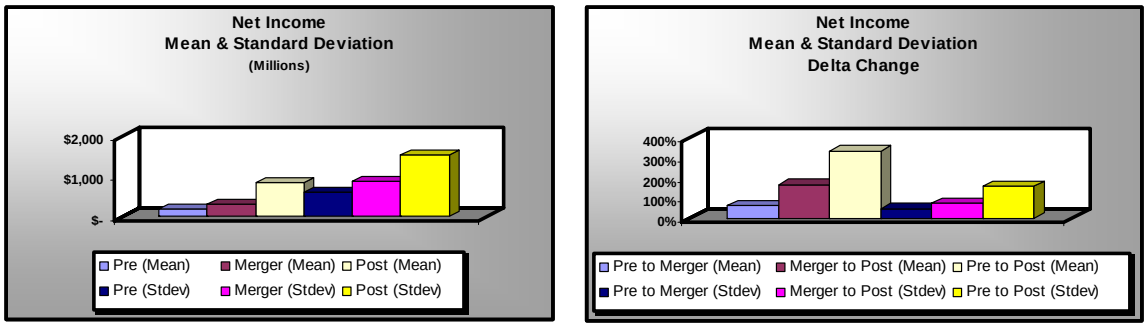


Figure 5. Description of Data Net Income

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

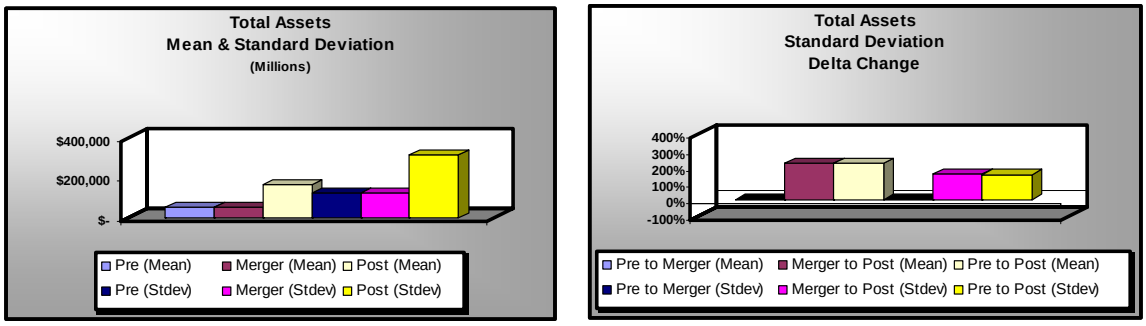


Figure 6. Description of Data Total Assets

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

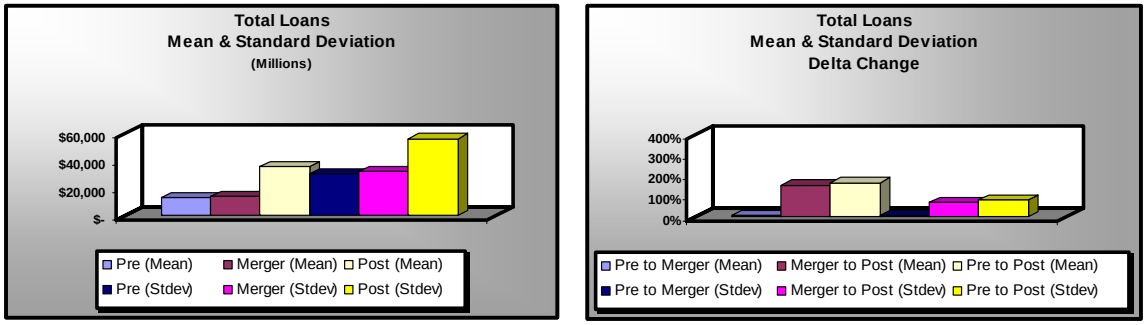


Figure 7. Description of Data Total Loans

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

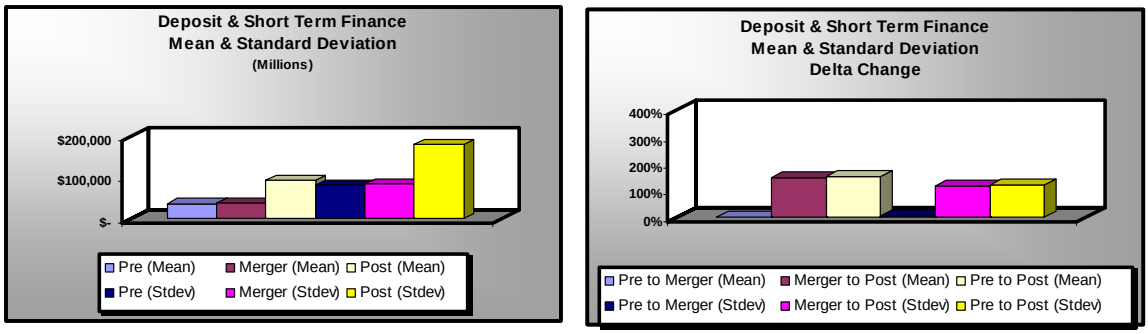


Figure 8. Description of Data Deposits & Short Term Finance

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

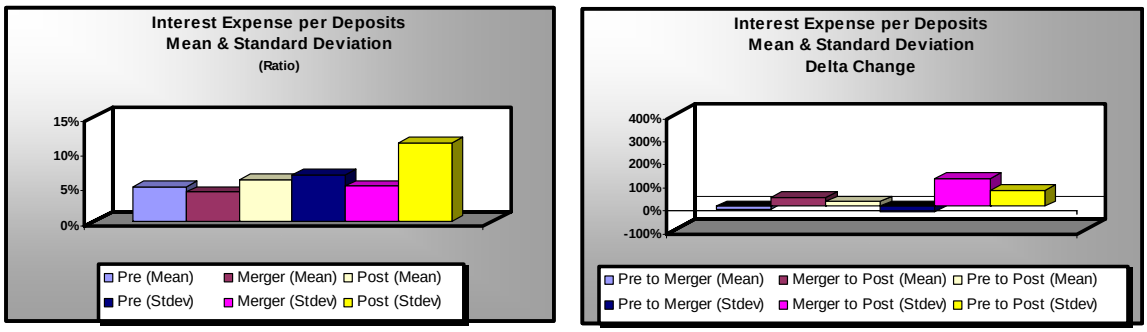


Figure 9. Description of Data Interest Expense per Deposits

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

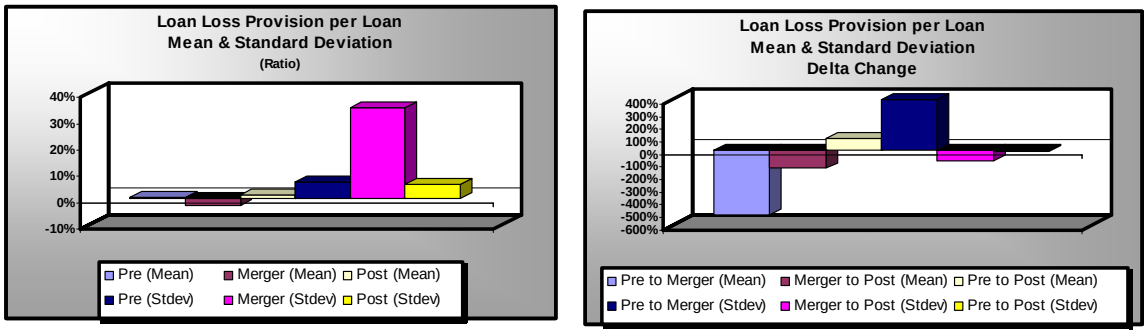


Figure 10. Description of Data Loan Loss Provision per Loan

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

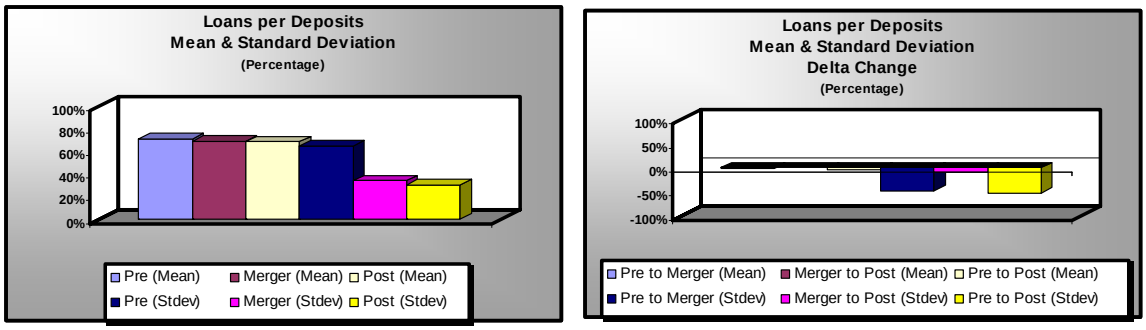


Figure 11. Description of Data Loans per Deposits

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

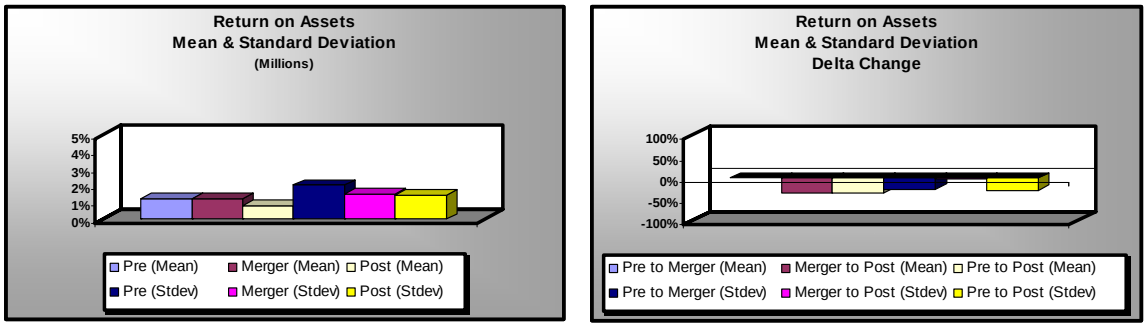


Figure 12. Description of Data Return on Assets

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

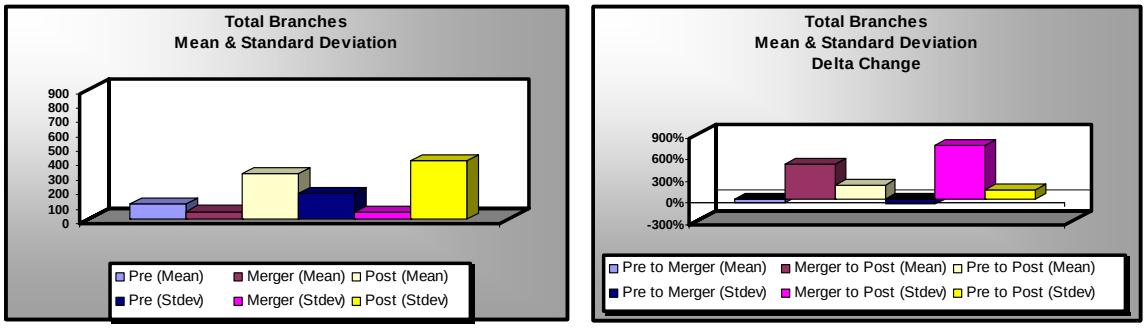


Figure 13. Description of Data Total Branches

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)
Note: There was not enough statistical data available to draw firm inferences from the total branches population in the European mergers banking industry.

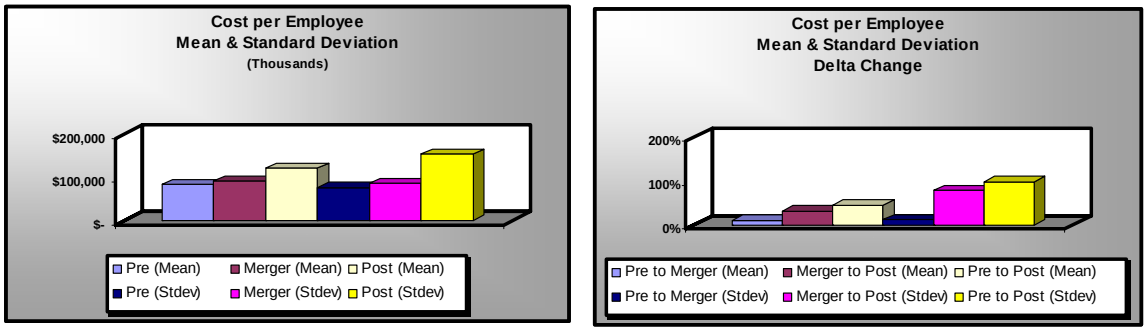


Figure 14. Description of Data Cost per Employee

Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

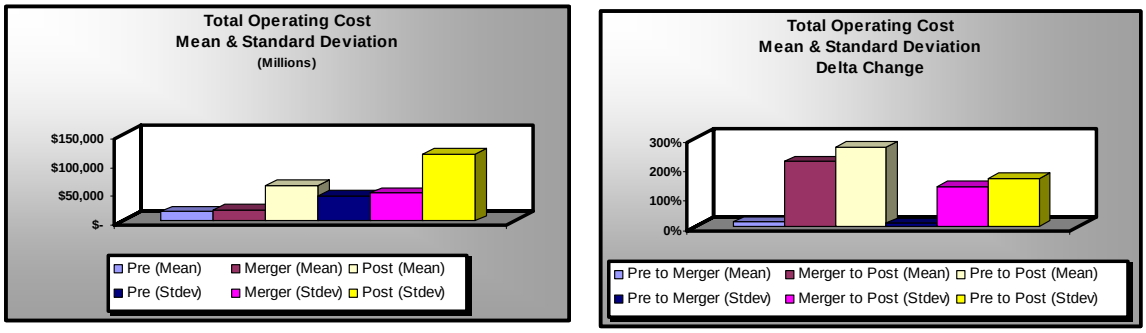
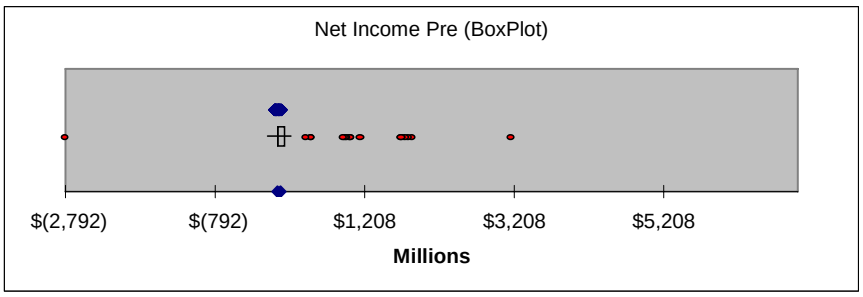


Figure 15. Description of Data Total Operating Cost

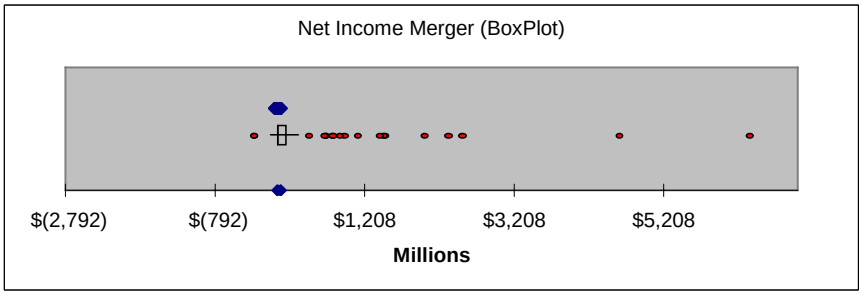
Source: LCDR Asbury, Capt Rodriguez-Aponte, and Capt Smith (Using Bankscope Database)

Pre (NI)
Smallest = -2792.4
Q1 = 5.0629
Median = 22.3
Q3 = 102.3
Largest = 3036
IQR = 97.2371



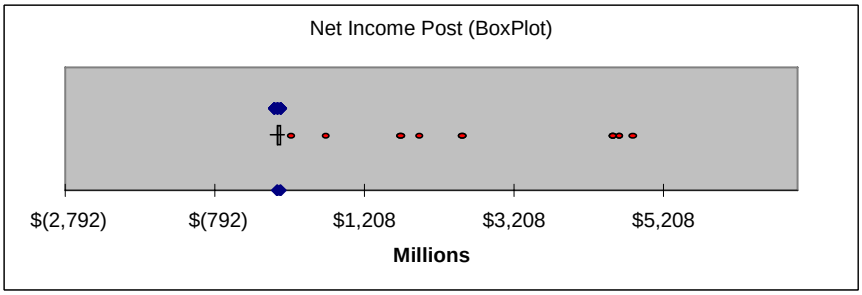
Outliers: 3036, 1756.4, 1732.9, 1664.3, 1618.9, 1613.7, 1079, 933.7, 932.5, 925.7, 879, 861.6, 432.4965, 424.4777, 386.4019, -2792.4,

Merger (NI)
Smallest = -318
Q1 = 4.5
Median = 28.1
Q3 = 127.2917
Largest = 6179
IQR = 122.7917



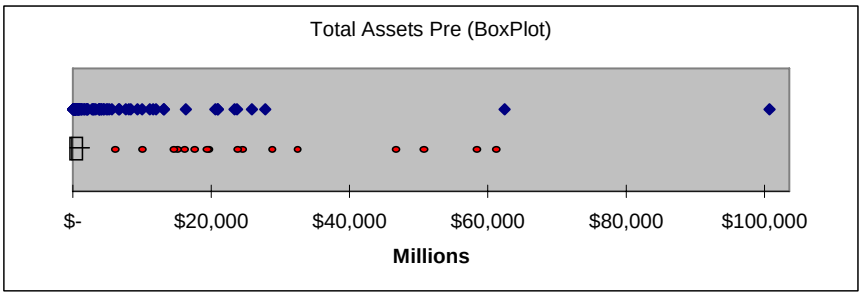
Outliers: 6179, 4503, 2440, 2241, 1924, 1403, 1392, 1370, 1058, 879, 825, 738, 717, 634, 619, 613, 395, -313, -318,

Post (NI)
Smallest = -77.5
Q1 = 0
Median = 0
Q3 = 67.45
Largest = 4670
IQR = 67.45



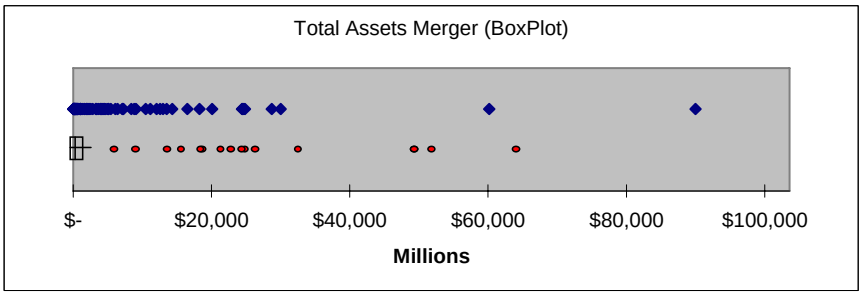
Outliers: 4670, 4502.8, 4502.8, 4399, 4399, 4399, 2431.7, 2431.7, 1861.2, 1613.7, 1613.7, 619.3364, 188.6832,

Figure 16. Box Plot Net Income



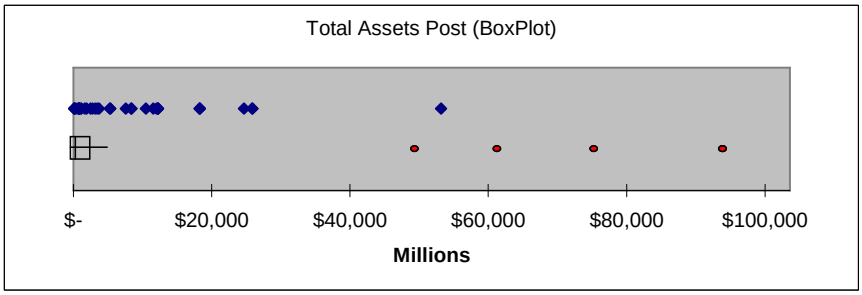
Pre (TA)
Smallest = 22.1
Q1 = 682.8
Median = 3741.4798
Q3 = 16327.7
Largest = 608934.4
IQR = 15644.9

Outliers: 608934.4, 584224.5, 504720.6, 464426.7, 323453.1, 288032.1, 246086.1, 236847.8, 200127.9, 194755.2, 176065.6, 161058.9, 152493, 149263.9, 100736.4, 62438.9,



Merger (TA)
Smallest = 30
Q1 = 639.285
Median = 4097
Q3 = 17377
Largest = 637285
IQR = 16737.715

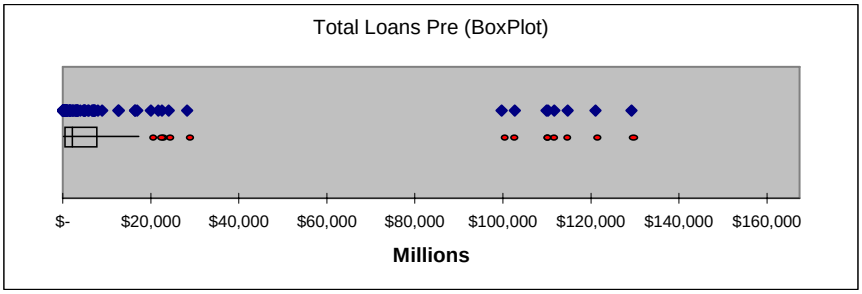
Outliers: 637285, 516282, 491011, 490619, 322832, 263918, 246636, 242584, 230720, 213307, 188233, 184955, 156846, 136850, 89991, 60173,



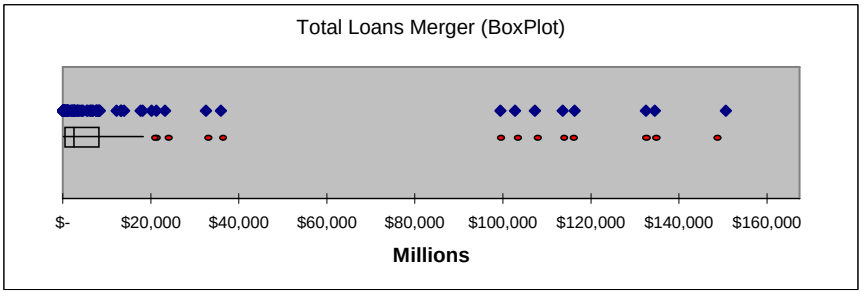
Post (TA)
Smallest = 116.198
Q1 = 1121.5
Median = 8413.3
Q3 = 25874
Largest = 932366.4
IQR = 24752.5

Outliers: 932366.4, 932366.4, 932366.4, 932366.4, 748387.1, 748387.1, 608934.4, 608934.4, 490619, 490619,

Figure 17. Box Plot Total Assets

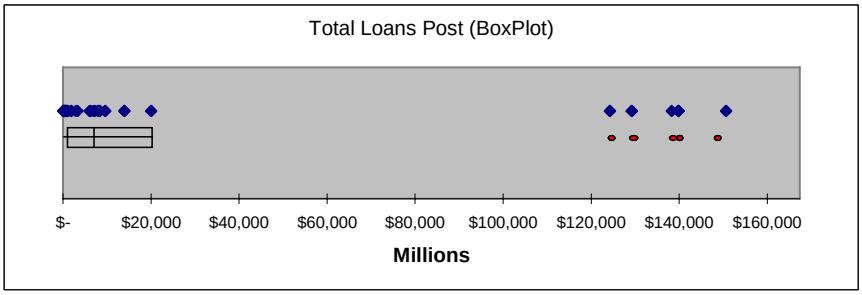


Pre (TL)
Smallest = 9
Q1 = 330.05
Median = 1921.4789
Q3 = 7107.2729
Largest = 129213
IQR = 6777.2229
Outliers: 129213, 121055.1, 114735.4, 111699, 110239.5, 109904.3, 102704.6, 99736.4, 28244.5, 24101.6, 22540.4,



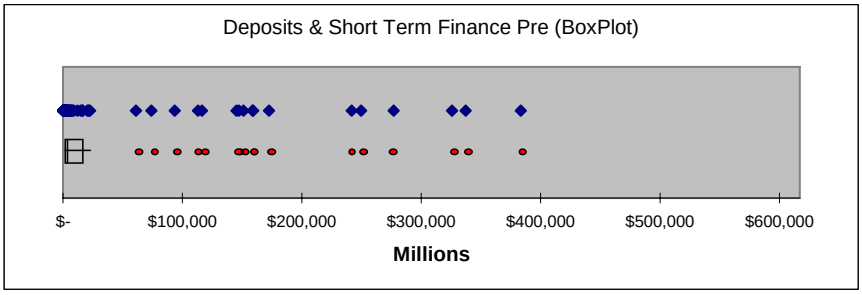
Merger (TL)
Smallest = 6
Q1 = 302.61
Median = 2221.3
Q3 = 7769.8524
Largest = 150662.5

IQR = 7467.2424
Outliers: 150662.5, 134541.7, 132480.7, 116294.1, 113587.8, 107281.7, 102787.8, 99463.9, 35926.1, 32571.4, 23263.7,



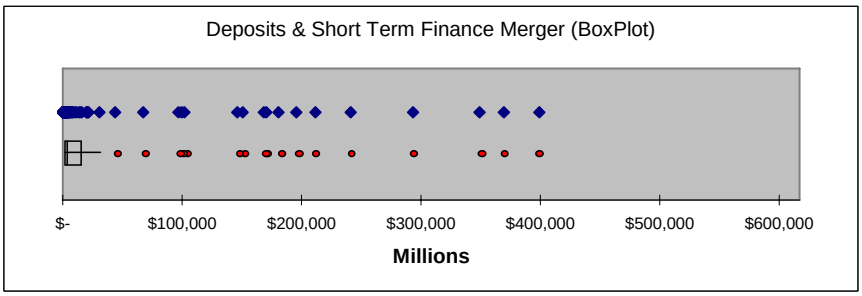
Post (TL)
Smallest = 51.4892
Q1 = 764
Median = 6943.8
Q3 = 20017.4
Largest = 150662.5
IQR = 19253.4
Outliers: 150662.5, 150662.5, 139843.1, 139843.1, 139843.1, 139843.1, 138300, 129213, 129213, 124257, 124257,

Figure 18. Box Plot Total Loans



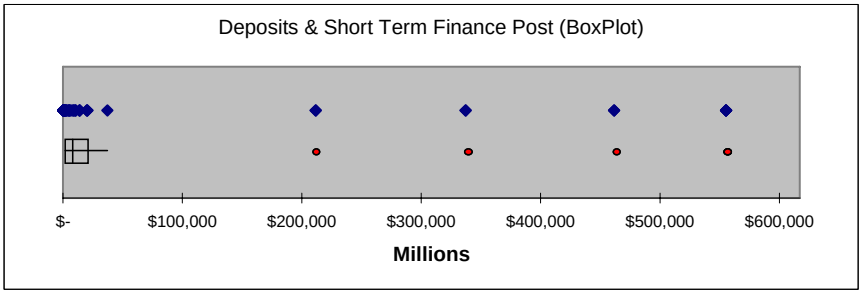
Pre (DSTF)
Smallest = 9.7
Q1 = 484.3181
Median = 2644.8
Q3 = 16462.3057
Largest = 383337.8
IQR = 15977.9876

Outliers: 383337.8, 337187.7, 325648.7, 276938.7, 249696.6, 241806.1, 172436.1, 159134.4, 158908.6, 151106.7, 147311.9, 145283.7, 116443, 113027.9, 93587.7, 73965.4, 61126.6,



Merger (DSTF)
Smallest = 16.1
Q1 = 468.95
Median = 2849.2
Q3 = 15272.5759
Largest = 399161.4
IQR = 14803.6259

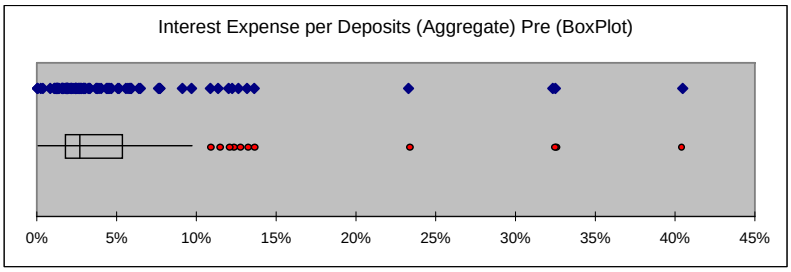
Outliers: 399161.4, 369470.4, 348997.9, 293387.8, 241134.1, 211554.1, 195595.6, 180711.4, 170401.2, 168301.3, 150622, 146075.4, 101825.4, 99590.4, 96782.9, 67395.8, 43835.4,



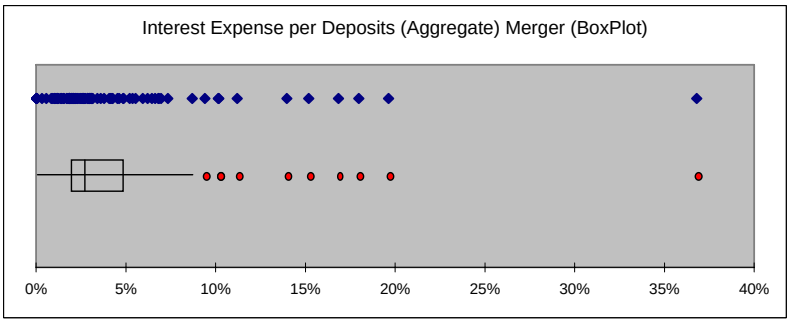
Post (DSFT)
Smallest = 79.043
Q1 = 913.425
Median = 5891.8
Q3 = 20305.7
Largest = 555258.6
IQR = 19392.275

Outliers: 555258.6, 555258.6, 555258.6, 555258.6, 461364.6, 461364.6, 337187.7, 337187.7, 211554.1, 211554.1,

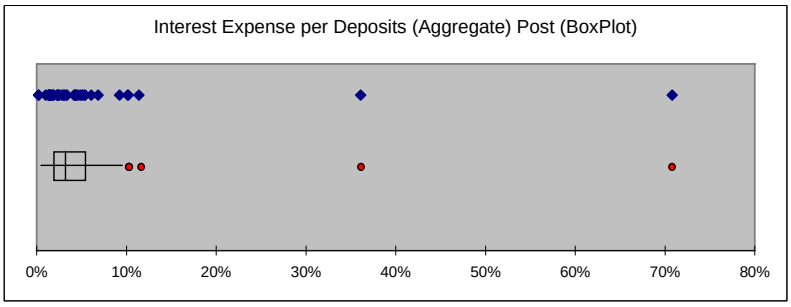
Figure 19. Box Plot Deposits & Short Term Finance



Pre (IE/D)
Smallest = 3.96481169547363E-04
Q1 = 1.80538652715001E-02
Median = 2.68297171836977E-02
Q3 = 5.37235064352949E-02
Largest = 0.404838432861046
IQR = 3.56696411637947E-02
Outliers: 0.404838432861046, 0.324888581786161, 0.323383126081021, 0.233008958912573, 0.136329863180274,

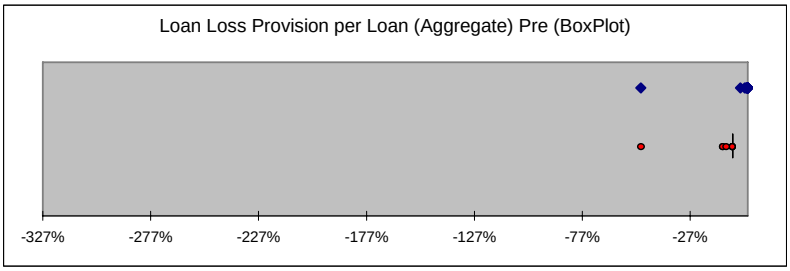


Merger (IE/D)
Smallest = 1.13722826016077E-04
Q1 = 1.84795715207089E-02
Median = 0.026668020060995
Q3 = 4.85187464814822E-02
Largest = 0.367985084086965
IQR = 3.00391749607733E-02
Outliers: 0.367985084086965, 0.196383500986626, 0.179689199790259, 0.168467791291347, 0.15190078474592,

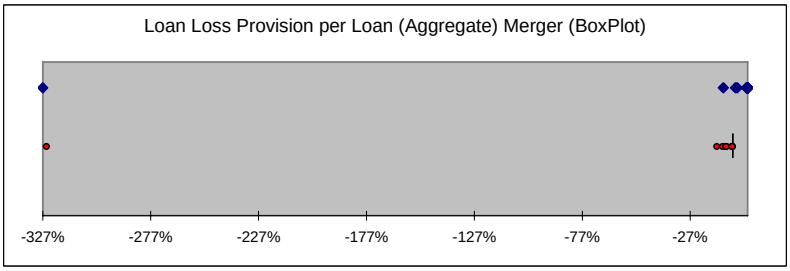


Post (IE/D)
Smallest = 2.07964594402439E-03
Q1 = 1.80444623926647E-02
Median = 0.032321486834479
Q3 = 5.08888669426554E-02
Largest = 0.70788773877008
IQR = 3.28444045499907E-02
Outliers: 0.70788773877008, 0.361055212578449, 0.113722826016077, 0.101968702675416, 0.101479952409336,

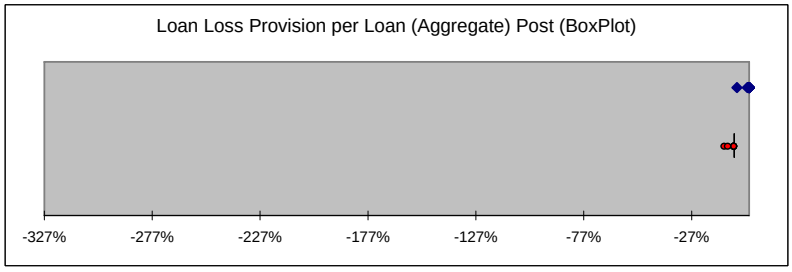
Figure 20. Box Plot Interest Expense per Deposits (Aggregate)



Pre (LLP/L)
Smallest = -0.495145631067961
Q1 = 1.1401214603748E-03
Median = 4.16507583908924E-03
Q3 = 1.16182089213635E-02
Largest = 0.222222222222222
IQR = 1.04780874609887E-02
Outliers: 0.222222222222222, 0.210043807135915, 6.07416879795396E-02, 5.71428571428571E-02, 3.84466044341472E-02, 3.40579710144928E-02, 3.02603626771173E-02, 2.81888918031149E-02, -3.34081976417743E-02, -0.495145631067961,

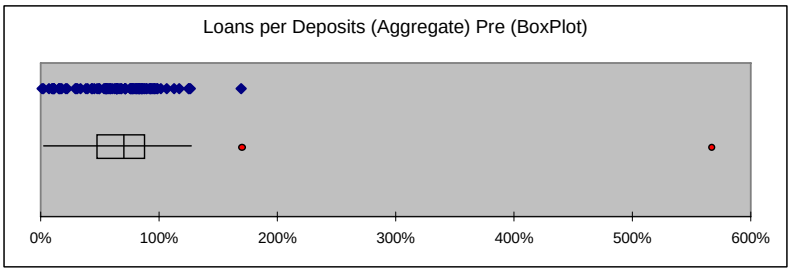


Merger (LLP/L)
Smallest = -3.26666666666667
Q1 = 3.75674106031693E-04
Median = 4.05285840682707E-03
Q3 = 1.54539600772698E-02
Largest = 0.168732510510592
IQR = 1.50782859712381E-02
Outliers: 0.168732510510592, 0.0753925310558, 5.86734693877551E-02, 0.051451838103121, 4.82364965526799E-02, 0.040220072092582, -0.048, -5.67813609010955E-02, -0.112781954887218, -3.26666666666667,

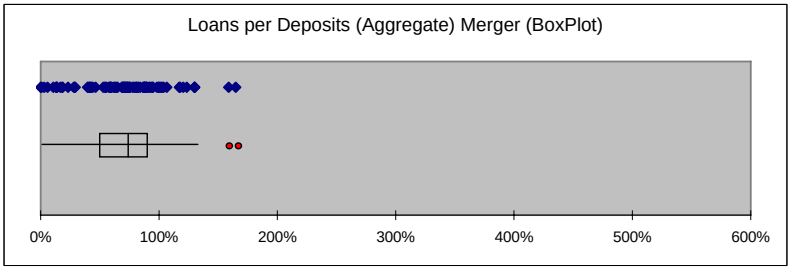


Post (LLP/L)
Smallest = -5.67813609010955E-02
Q1 = 2.38366108673276E-04
Median = 2.5122639775974E-03
Q3 = 7.46185462862931E-03
Largest = 0.347888332140301
IQR = 7.22348851995604E-03
Outliers: 0.347888332140301, 0.040220072092582, 0.040220072092582, 3.68547184608497E-02, 0.022297100916362, 0.022297100916362, 2.09348318942646E-02, -5.67813609010955E-02,

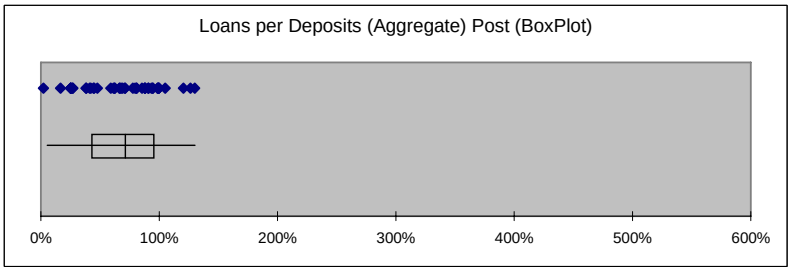
Figure 21. Box Plot Loan Loss Provision per Loan (Aggregate)



Pre (L/D)
Smallest = 1.14547014256502E-02
Q1 = 0.471235826914493
Median = 0.697012393937793
Q3 = 0.86078966322179
Largest = 6.18373493975904
IQR = 0.389553836307297
Outliers: 6.18373493975904, 1.69374855679409,

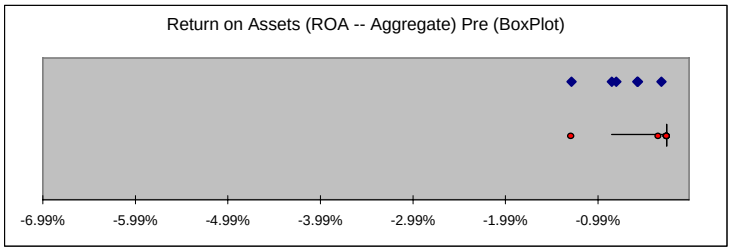


Merger (L/D)
Smallest = 1.36875675823649E-04
Q1 = 0.495595005772164
Median = 0.726859937128886
Q3 = 0.893282573862461
Largest = 1.64770499928906
IQR = 0.397687568090298
Outliers: 1.64770499928906, 1.58921161825726,

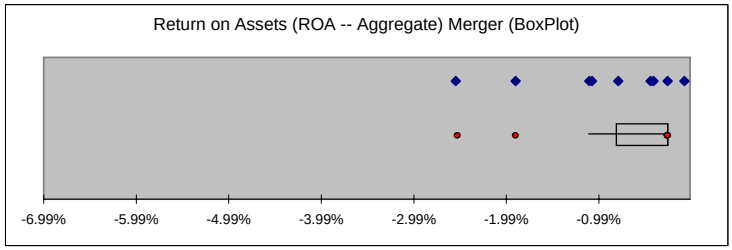


Post(L/D)
Smallest = 2.05738598877055E-02
Q1 = 0.420890986487161
Median = 0.712170078481107
Q3 = 0.935053392763362
Largest = 1.29995213178614
IQR = 0.514162406276201
Outliers:

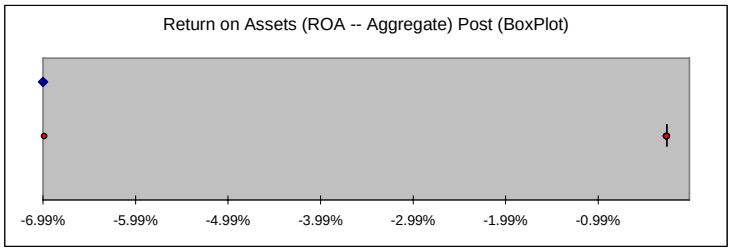
Figure 22. Box Plot Loans per Deposits (Aggregate)



Pre (ROA)
Smallest = -1.27126365322157E-02
Q1 = 4.52747535489256E-03
Median = 8.17051509769094E-03
Q3 = 1.47044019010387E-02
Largest = 0.170491803278689
IQR = 1.01769265461461E-02
Outliers: 0.170491803278689, 6.98786318499448E-02, 4.04701758003815E-02, 3.69799263839789E-02, 3.47874121891557E-02, 0.030157322253863, -1.27126365322157E-02,



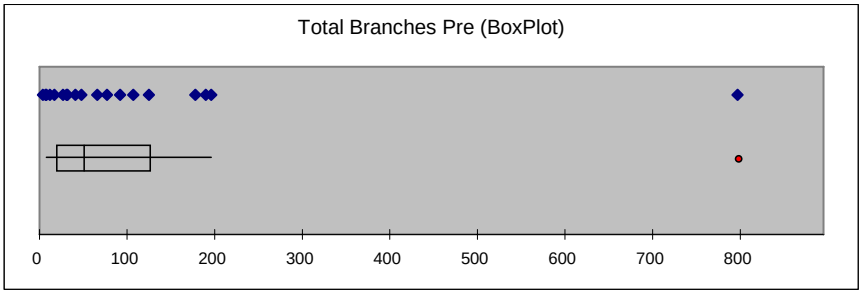
Merger (ROA)
Smallest = -2.53333333333333E-02
Q1 = 3.82874224248178E-03
Median = 9.41390829031278E-03
Q3 = 1.67158308751229E-02
Largest = 8.18181818181818E-02
IQR = 1.28870886326411E-02
Outliers: 8.18181818181818E-02, 5.76923076923077E-02, 5.04050960407683E-02, 4.41496302740322E-02, -1.88679245283019E-02, -2.53333333333333E-02,



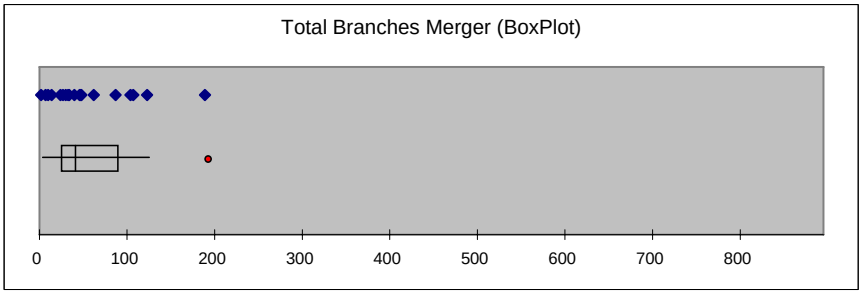
Post (ROA)
Smallest = -6.98512843623254E-02
Q1 = 4.64922487195934E-03
Median = 6.88159498758526E-03
Q3 = 1.07359130531437E-02
Largest = 3.69799263839789E-02
IQR = 6.08668818118434E-03
Outliers: 3.69799263839789E-02, 2.78535880558677E-02, 2.51052227233396E-02, 2.41644346104577E-02, 2.40501064885711E-02, 2.37387648593795E-02, -6.98512843623254E-02,

Figure 23. Box Plot Return on Assets (Aggregate)

Pre (TB)
Smallest = 4
Q1 = 17
Median = 48
Q3 = 125
Largest = 797
IQR = 108
Outliers: 797,



Merger (TB)
Smallest = 2
Q1 = 24
Median = 40
Q3 = 87
Largest = 189
IQR = 63
Outliers: 189,



Post (TB)
Smallest = 4
Q1 = 8.25
Median = 52
Q3 = 806
Largest = 806
IQR = 797.75
Outliers:

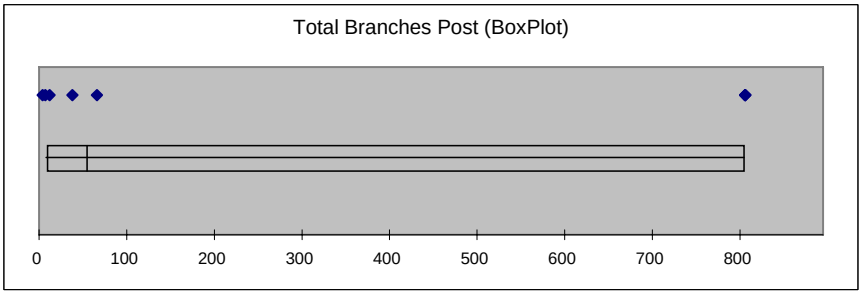
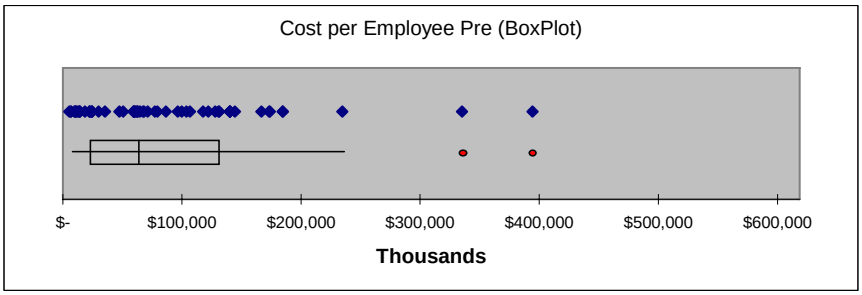
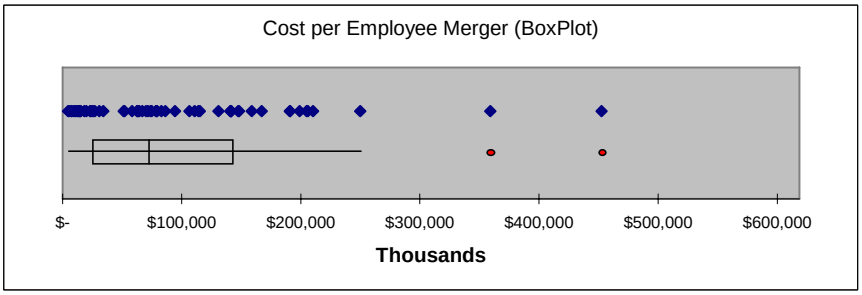


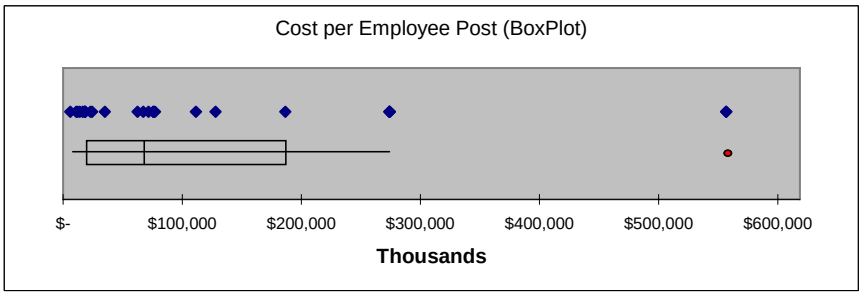
Figure 24. Box Plot Total Branches



Pre (C/E)
Smallest = 5416.6667
Q1 = 22672.9839
Median = 62861.3356
Q3 = 129964.6512
Largest = 394438.34
IQR = 107291.6673
Outliers: 394438.34, 335245.9016,

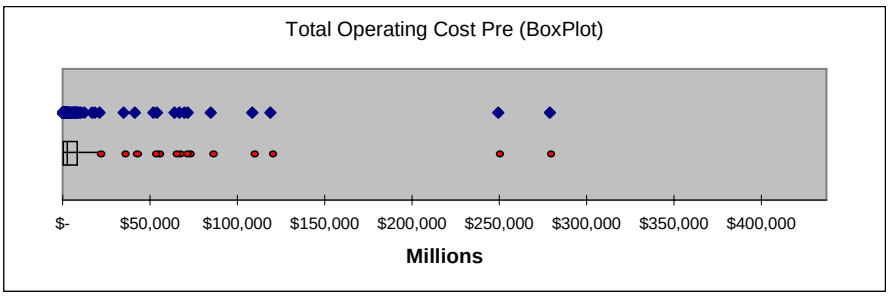


Merger (C/E)
Smallest = 4615.3846
Q1 = 23134.3284
Median = 71640.0911
Q3 = 141374.8956
Largest = 452534.5622
IQR = 118240.5672
Outliers: 452534.5622, 359118.7863,

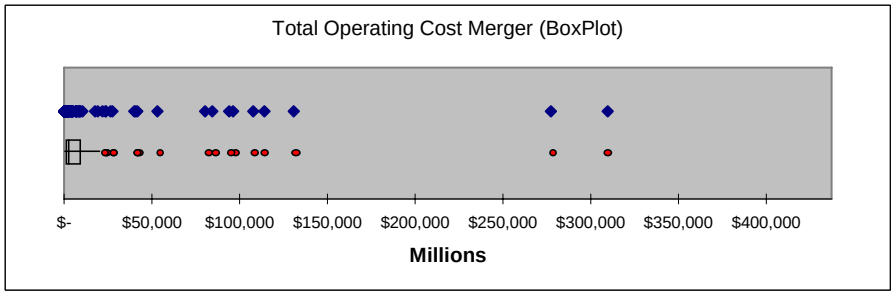


Post (C/E)
Smallest = 6020.6186
Q1 = 18292.6829
Median = 67423.0963
Q3 = 186626.9165
Largest = 556748.4313
IQR = 168334.2336
Outliers: 556748.4313, 556748.4313,

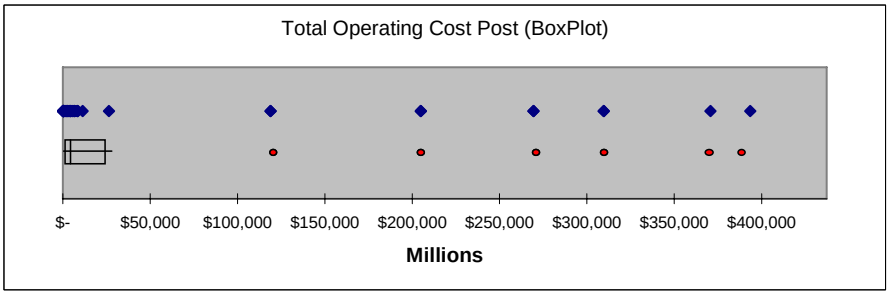
Figure 25. Box Plot Cost per Employee



Pre (TOC)
Smallest = 9.862
Q1 = 424.0325
Median = 1896.636
Q3 = 7676.1995
Largest = 278988.684
IQR = 7252.167
Outliers: 278988.684, 249437.76, 118881.279, 108595.812, 84863.35, 71573.3, 69697.238, 66938.146, 64042.728, 53977.567, 52025.764, 41304.21, 34978.075, 21116.8638,



Merger (TOC)
Smallest = 9.4095
Q1 = 565.7
Median = 2197.26
Q3 = 8678.48
Largest = 309671.31
IQR = 8112.78
Outliers: 309671.31, 277313.52, 130832.8, 114093.2, 107768.64, 96246.26, 94043.09, 84351.24, 80305.5, 53114.9, 41715.06, 40811.97, 40075.14, 27638.1, 26474.63, 23759.83, 23662.38, 21859.58,



Post (TOC)
Smallest = 51.8918
Q1 = 807.158
Median = 4396.224
Q3 = 22712.5777
Largest = 393494.2
IQR = 21905.4197
Outliers: 393494.2, 370659.74, 309657.556, 309657.556, 269350.77, 269350.77, 204895.042, 204895.042, 118881.279,

Figure 26. Box Plot Total Operating Cost

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